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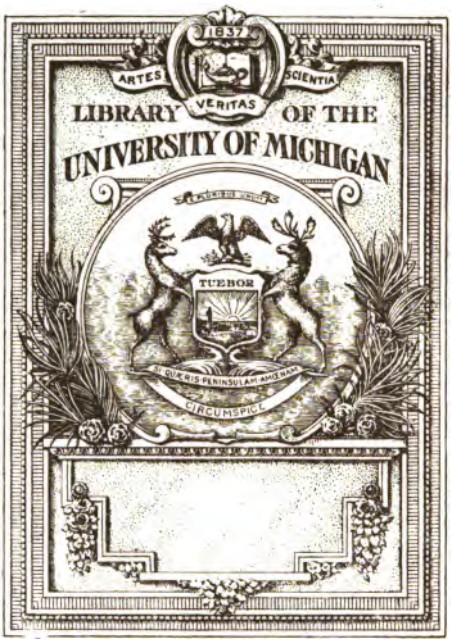

THE GIFT OF
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ANNUAL REPORT

OF THE

WATER SUPPLY COMMISSION

OF

PENNSYLVANIA

1916

HARRISBURG, PENNA.:
J. L. L. KUHN, PRINTER TO THE COMMONWEALTH
1917

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LETTER OF TRANSMITTAL

Office of the Water Supply Commission,

Harrisburg, December 31, 1916.

His Excellency, the Governor of the Commonwealth of Pennsylvania:
The Members of the Senate and the House of Representatives of the Commonwealth of Pennsylvania:

Gentlemen: In compliance with the Act of the General Assembly of the Commonwealth of Pennsylvania, entitled:

> "An act creating the Water Supply Commission of Pennsylvania; defining its duties; fixing the scope of its authority and powers, and making an appropriation for the payment of the salaries and expenses connected therewith,"

approved the fourth day of May, Anno Domini one thousand nine hundred five, the Water Supply Commission of Pennsylvania respectfully submits its report for the year 1916.

WATER SUPPLY COMMISSION OF PENNSYLVANIA,

THOMAS J. LYNCH,

Secretary.

REPORT

OF THE

Water Supply Commission of Pennsylvania

1916

CHAPTER I

INTRODUCTION

The work of the Water Supply Commission during the year 1916 may be briefly described as follows:

INCORPORATION OF WATER AND WATER POWER COMPANIES

Seven applications for the incorporation of water supply companies were approved by the Commission during the year 1916. One of these proposed companies was refused a certificate of public convenience by the Public Service Commission, and two applications were approved too late for the companies to be incorporated in 1916. Two other companies were incorporated whose applications had been approved in 1915, making a total of six new companies incorporated, as compared with eight for the previous year. No applications for the incorporation of water power companies were approved.

TABLE NO. I

Water Supply Companies Incorporated During the Year 1916

No.	Name	Date of Incorporation	Territory Covered by Charter	Status
1	Aston Water Co.	Dec. 6, 1916	Aston Twp., Delaware County	Active
2	Cambria Water Co. of Portage Twp., Pa.	*Jan. 6, 1916	Portion of Portage Twp., Cambria County	Not in operation
3	Northampton County Water Co.	*Jan. 6, 1916	Freemansburg Borough, Northampton County	Not in operation
4	Smithfield Water Co.	Dec. 11, 1916	Smithfield Borough, Fayette County	Active
5	Upper Chichester Water Co.	Dec. 6, 1916	Upper Chichester Twp., Delaware County	Active
6	Valley Township Water Co.	Oct. 5, 1916	Valley Twp., Chester County	Not in operation

*Approved by the Commission December 8, 1915.

TABLE NO. II

Water Supply Companies Incorporated in 1916 Which are in Operation

Name	Territory Supplied	Source of Supply	System of Supply
Aston Water Co.	Aston Twp., Delaware County	New Chester W. Co.	Pumping
Smithfield Water Co.	Smithfield Borough, Fayette County	Victor Hollow Stream	Gravity
Upper Chichester Water Co.	Upper Chichester Twp., Delaware County	New Chester Water Co.	Pumping

SUPERVISION OF DAMS

Sixty-three applications were received in connection with the construction of new dams or the changing or altering of existing dams, and 59 permits were issued, of which 28 were for the construction of new dams. Construction work has been in progress on 89 dams for which permits have been issued or where work has been ordered, and 19 new dams have been completed. The existing dams examined numbered 52, and of these six were ordered repaired. The field examinations made reached a total of 276, and may be classified as follows: Examinations of sites of proposed dams, 38; examinations of existing dams, 52; supplemental examinations of existing dams, 59; inspections of construction work on new dams, 68; inspections of repair work on existing dams, 59. In addition to the above, a representative has been maintained at Coatesville constantly, supervising the construction of the reinforced concrete dam which the city is building on Rock Run. The following table is a summary of the work done in connection with dams since the Commission has exercised jurisdiction over such structures:

TABLE NO. III

Number of Permits Issued for the Construction and Repair of Dams, Progress Examinations During Construction, and Examinations of Existing Dams

	Prior to 1914	1914	1915	1916	Total
Permits for new dams	31	46	43	28	148
Permits for modifications or repairs of existing dams	6	22	23	31	82
Progress examinations during construction	98	186	278	165	727
Examinations of existing dams	61	232	348	111	752

It will be noted that 15 less permits for new dams were issued in 1916 than in 1915, and 18 less than in 1914; this may be attributed to the fact that 1915 and 1916 were comparatively wet years, which condition does not stimulate the construction of storage reservoirs as does a series of dry years, and to the increasing costs of labor and material. The largest four dams now under construction will create reservoirs with a total storage capacity of 1,210,000,000 gallons when completed to the heights contemplated for present construction, and 2,428,000,000 gallons when finished. The total number of dams of which the Commission has a record is 1,452, of which 942 have been examined, the remainder being for the most part low and unimportant structures.

Attention is called to Chapter III of the 1915 report of the Water Supply Commission, where a comprehensive policy for the supervision of dams is set forth.

ENCROACHMENTS

Seven hundred and sixty applications for encroachments, exclusive of dams, were approved by the Commission during 1916, the largest number passed upon in any year since the passage of the 1913 Encroachment Act. In the previous year 485 applications were approved, in 1914 five hundred and sixty-one, and in 1913 one hundred and forty-four. Six hundred and twenty-four permits were issued for bridges, 45 for fills and 91 for miscellaneous structures, including walls, piers, ice breakers, etc.

SURVEY OF CODORUS CREEK IN AND THROUGH THE CITY OF YORK

The city of York has suffered repeatedly from floods in Codorus Creek, the most disastrous one occurring on June 26, 1884. Detailed individual losses were ascertained at that time and published in the York Evening Dispatch and Record, showing a total property damage amounting to nearly $260,000. In addition to this, all bridges over Codorus Creek in York and at numerous points in the country were swept away. The cost to the county of replacing these bridges was covered by a bond issue of $100,000. Other recorded floods, of less intensity, occurred in 1784, 1786, 1800, 1814, 1817 and 1822, in the latter year there being two floods, one in February and one in May. The 1786 flood, known as the "Pumpkin Flood," was the largest recorded up to that date. The flood of August 8, 1817, caused a submergence of nearly one-third of the town and ten persons were re-

ported drowned. The February, 1822, flood was caused largely by melting snow and was almost as destructive as that of 1817. Many dwelling houses were destroyed and several county bridges removed.

Since 1844 the channel of Codorus Creek has gradually been encroached upon and it is at this time totally inadequate to discharge flood waters, so that a repetition of such floods as have occurred in the past, which must be expected, would cause much greater damage, both because of the obstructed channel and the larger property interests involved.

At the request of authorities of the city a complete topographical survey was made of Codorus Creek, from a point 4,800 feet above the city line to Loucks Mill, 1¼ miles below the city. The survey was carried on either side of the stream beyond the limits of the inundation of the flood of 1884, which covered an area in the city of 218 acres. A profile of the bed of stream, normal water surface and water surface of the 1884 flood has been plotted, and cross-sections taken at each bridge crossing and at other points along the channel.

The Commission, however, because of the limited appropriation at its disposal, has been unable to make the necessary hydraulic studies to determine upon the channel improvements necessary to pass maximum floods, or to decide whether the problem is one involving not alone increased channel capacity, but regulation of the flow by means of storage reservoirs as well.

STREAM GAGING, FLOOD WARNING AND PRECIPITATION

Four new stream gaging stations were established, and because of unsatisfactory conditions nine stations were discontinued. Daily records of stream heights were received from 96 stations for the entire year, and a partial record was obtained from nine others. Each station was visited by hydrographers at least once during the year; all gages were leveled and 293 discharge measurements were made.

Flood warning service was conducted in the Susquehanna Basin, and additional data collected which increased the efficiency of the service.

Four additional rainfall stations were established during the year, making a total of 24 stations from which weekly reports are received.

The stream gaging work of the Commission should be enlarged and extended, for the purpose of obtaining sufficient data to supply the increasing demand for information pertaining to the development and regulation of large and small streams. In order that this object may be properly attained it is necessary that the Hydrographic Division, which conducts this work, be reorganized on an enlarged scale.

PYMATUNING RESERVOIR PROJECT

During the year 1916 investigations and surveys of this project, progress reports upon which appeared in the annual reports of the Commission from 1912 to 1915, were continued. The hydrographic studies indicated that the reservoir would be capable of so regulating the flow of the Shenango River as to provide at Sharon a discharge of at least 400 cubic feet per second. Field work and property maps were completed, investigations of foundation at the dam site were made, and hydrographic investigations continued. In conjunction with the investigation of the Pymatuning Reservoir Project, studies were made simultaneously of channel conditions in the Shenango, Mahoning and Beaver rivers, and capacities computed and plans for channel improvement outlined. As a result, plans have been determined upon which furnish the Commission accurate information to facilitate action upon applications for proposed obstructions in accordance with a definite general plan for the ultimate improvement of the channels and the eventual reduction of flood height and flood damage. The details of the Pymatuning Reservoir Project studies are set forth in Chapter III of this report.

WATER CONTROL AND NAVIGATION

The Commission, in its annual report for the year 1915, recommended a comprehensive policy for the conservation and control of the inland waters of the State, especially for flood prevention, domestic and industrial water supply, and, to a less degree, for water power, and called attention to the fact that an adequate policy for the control and regulation of the waters of the State could not be formulated except insofar as present and probable future conditions are known and understood. The report showed that we are reaching a condition where unless the water supply of the State is controlled and conserved, it will not continue fully to serve the needs of the State and a gradual slackening of development will occur. The report also indicated the conditions necessary for the development of such a policy, which are summarized as follows: First, a thorough knowledge of the streams of the State, so that the problems of control may be known; second, general plans for solving these problems; and third, an orderly legal code which will make practicable the execution of plans when developed and insure control and supervision over constructions affecting the river systems. These three problems are discussed in detail in the report for the year 1915, and a plan of procedure outlined for carrying the policies therein recommended into effect.

It is the purpose of the chapter contained in this report, entitled "Navigation," to extend this policy to cover navigation,—inland, lake, and tidewater, and to point out existing conditions in regard thereto, and how they may be improved and navigation developed.

CHAPTER II

NAVIGATION

The largely increased domestic and foreign trade of the country during the last few years, with the consequent congestion of railroad traffic and tidewater terminals, has again directed the attention of the public to the question of securing relief from this congestion by an improvement of internal waterways, thus diverting some of the traffic from the overburdened railroads and, by a fuller development of a number of seaports, effecting a distribution of foreign trade, now largely centered in New York, among a number of other Atlantic ports.

Recent railroad conditions have shown conclusively that the limit of business has been reached in New York insofar as the present railroad and shipping facilities are concerned. To effect any considerable further increase would mean not only an increase in the number or capacity of the railroad lines serving the port, but it would also mean the very considerable enlargement of railroad terminals, which can be accomplished only at very great, if not altogether prohibitive, expense.

A study of the entire situation leads to the conclusion that there are other ports along the coast which are capable of a very great development over and above their present business at a cost much less than that necessary to afford the requisite additional facilities at New York.

The seaport which stands out most prominently in the way of accessibility and possibilities of development at a moderate cost is that of Philadelphia, long first in the tonnage and value of its commerce, and only excelled by New York when the completion of the system of internal waterways connecting the Hudson River with the Great Lakes was completed and placed in operation.

To present to the consideration of the people of this Commonwealth, and especially those interested in its further development along industrial and commercial lines, the possibilities of improved navigation and an enlarged trade with our own and other countries by means of our rivers and lakes is the purpose of this chapter.

The study of this question is naturally embraced under three separate and distinct heads:

I. Tidewater Navigation
II. Lake Navigation
III. Inland Navigation

I. TIDEWATER NAVIGATION

In Pennsylvania tidewater navigation is limited to the Delaware and Schuylkill rivers, and centers in Philadelphia with the neighboring town of Chester. For many years Philadelphia was first in importance among the seaports of the United States, but recently, through a combination of causes, it had fallen to second in tonnage and fifth in value of its foreign and domestic commerce. In the year 1916 it recovered second place with an export trade alone of almost $400,000,000.

Pennsylvania stands pre-eminent as a manufacturing State and as such it should have a seaport capable of handling all of its products which are exported or which may be delivered by water anywhere along our own coast.

Modern ports mean more than ships. They mean channels and docks and railroads and modern cost saving devices for the prompt and economical handling of cargoes.

Since 1885 the Federal Government has been engaged in the project of deepening the channel of the Delaware River and Bay, with the result that Philadelphia now has a channel with a depth of from 30 to 35 feet at medium low water. In this project the United States Government has expended approximately twenty-one millions of dollars. This channel is from 800 to 1,200 feet in width, and the work of increasing the depth from 30 to 35 feet is about 40 per cent completed.

As ships increase in size and draft there is a constant demand for increased depth of water, and it is not too early for Pennsylvania to agitate for a 40-foot channel from Philadelphia to the ocean. The experience of other ports has invariably been that large vessels soon learn the way to deep harbors.

Within the last few years Philadelphia has come to realize that modern docks and other facilities must be provided if shippers are to be attracted to a port. The expenditures recently authorized by Councils and by the people of Philadelphia in granting authority for a bond issue for port improvements will give the City approximately $15,000,000 to spend in the modernization of its present facilities and their extension to meet the rapidly growing needs of its commerce. The City has already entered into agreements with the Pennsylvania Railroad Company by which it becomes the owner of an extensive frontage in South Philadelphia, along which a group of ten or more modern piers are to be erected, all of which, as well as a number of existing piers, will be served by the belt line railroad, now jointly controlled by the Pennsylvania Railroad Company and the Baltimore & Ohio Railroad Company, but offering equal terms to all other railroads in order that they may reach these docks.

The completion of these docks and the relocation of the belt line railroad, already agreed upon, will give to the city dock facilities excelled by no other American port.

In one other respect, however, the port needs additional equipment and that is dry docks. At this time there are only three dry docks available, two of which are owned by the Federal Government. A new dry dock is now under contemplation to be erected by private parties, but even this will not afford accommodations adequate for the increased traffic anticipated. Liverpool has 22 dry docks, Antwerp 9, Southampton 7, Glasgow 6, and Boston 5.

In addition to these improvements there is great need for additional anchorage ground for vessels of deep draft. At present large vessels, heavily laden and lying deep in the water, if unable to go direct from the wharves to the ocean, must anchor in the channel, to the inconvenience and danger of other vessels. The width of the Delaware is such that ample room can be secured provided it is dredged to the proper depth. The Federal Government confines its improvements strictly within a well-defined channel,—the city to that portion of the shore lying above low water mark in the river, thus leaving a considerable area between the channel and the docks as a "no man's land." It is contended that in view of the fact that the title to this portion of the bed of the stream is in the Commonwealth, it is only right and proper that the Commonwealth should remove this obstacle in the way of free navigation. As a precedent for this action upon the part of the Commonwealth of Pennsylvania, the work done by the State of Massachusetts toward the improvement of the port of Boston may be cited. Within recent years the state authorities have dredged out anchorages, one in East Boston being 1,000 feet in width by one mile in length, to a depth of 30 feet, this work being done between the years 1900 and 1911, while other anchorages of lesser extent have been provided in a similar manner. The State has also expended considerable sums in the deepening of the docks, all the dredged material being used in filling and reclaiming portions of the Boston "flats," large areas of which have been graded up and have become valuable both for the enlargement of the wharf and docking facilities of the port and as locations for industrial operations.

HORSESHOE SHOAL

Other essential dredging work which should be performed by the State consists of the removal of "Horseshoe Shoal," on the Pennsylvania side of the channel adjacent to and north of League Island, where excavation is necessary in order to bring deep water to the pier head line on the Philadelphia side. This will make available the new terminal piers being erected in South Philadelphia under the so-called

South Philadelphia agreement now existing between the railroads and the City. This shoal is at present covered at mean low water to a depth of from 3 to 15 feet, and has always been an extremely troublesome place in the Delaware River and a decided impediment to navigation. It is estimated that the dredging of the Horseshoe Shoal would require the removal of nearly four million cubic yards of material, which would cost approximately $500,000.

SCHUYLKILL RIVER

The Schuylkill River, along that portion of its course between Fairmount Dam and its mouth, a distance of approximately seven miles through and along the westerly side of Philadelphia, offers great possibilities for navigation. In the past, when the Delaware River water front was adequate for meeting the needs of the port's commerce, the necessity for improving the Schuylkill River did not exist. Now, however, with the present (Delaware water) front congested with traffic and the increases that are sure to take place in the next few years, the Schuylkill River should be made available. It offers wonderful possibilities for terminal facilities if improved. The depth at low water varies from approximately 30 feet at its mouth to 18 feet at Walnut street, which is the head of deep water navigation. For several miles along the westerly bank, and to a less extent along the eastern bank of the river, the adjacent shore consists of low-lying mud flats with the shore so far back from the channel as to be, in its present condition, of no value for shipping. Moreover, it is undesirable to expend large sums in dredging the Schuylkill until these mud banks can be sustained in place, for if the channel is dredged to a great depth the soft material constituting the banks will slip into the dredged channel and the cost of maintenance will be extremely heavy.

The last appropriation made by the United States Government for dredging in the Schuylkill River was in 1896, and since that time the burden of maintaining the narrow channel has been assumed by the City of Philadelphia with some aid from the State. The municipality has spent approximately $750,000, not so much to widen or deepen the channel as to maintain it in its narrow and inadequate dimensions which are barely sufficient to serve the needs of shipping in connection with existing industrial plants on the border of the stream. With proper improvements both shores of this river should be lined with manufacturing industries having direct steamer and railroad connections. The river potentially is a great asset, and even in its present unimproved condition its water-borne traffic is enormous when one considers the difficulties under which that traffic labors. Even now nearly one-half of the export tonnage of the entire port of

Philadelphia originates on the Schuylkill River. The stream should be improved at once and an effort made to attract industrial plants to its borders. The Commonwealth should make appropriations for assisting the City of Philadelphia in: first, building the bulkheads on either side of the river; second, in dredging the stream; and third, in securing the aid of the central government for maintaining the channel after it is completed. These improvements once made, there is every reason to believe that the Schuylkill River would become one of the most valuable assets in increasing foreign commerce at the port.

ROOM FOR FUTURE GROWTH

Edward J. Clapp, Professor of Economics in New York University, in "The Port of Boston" (1916), says:

"All ports but New York have traffic problems. But Boston, Baltimore and Philadelphia are confronted with no such problem in physical expansion. Their effort will have to be directed toward getting business; there will be no great difficulty in accommodating it in choice locations."

Philadelphia is a river port, with a frontage along the Delaware of 18.8 miles and along the Schuylkill of 14.2 miles, making a total of 33 miles. Of this frontage possibly eight miles immediately in front of the city has been closely built up, and this section with a small portion of the Schuylkill frontage accommodates the bulk of the present traffic. The present undeveloped frontage ought to prove ample for many years to come, and when this has been utilized there is still a possibility for increased facilities by the construction of artificial basins and docks by excavation in the low lands along both sides of the Delaware and the west side of the Schuylkill, as has been done in the case of a number of European seaports, notably Manchester, England; Havre and Dunkirk, France; Duisberg, Germany; Antwerp, Belgium; and Rotterdam, Holland.

The river frontage with the desirable sites lying back of it offers an excellent opportunity for the location of great industrial plants, and it is estimated that within the past two years approximately $125,000,000 has been invested in new plants or in additions to and extensions of existing concerns.

THE RELATION OF THE PORT OF PHILADELPHIA TO THE STATE

According to the census of 1910 the city of Philadelphia contains about 20 per cent of the entire population of the state, the proportion being almost exactly that of the city of Boston as compared with the state of Massachusetts and of New Orleans and Louisiana.

Living within the counties whose county seats are inside a 75-mile radius of Philadelphia there are 2,962,243 out of a total population of 7,665,111 according to the same authority, or almost 39 per cent. Attention has recently been called to the fact that Philadelphia is the natural outlet for the products of 20,571 industrial and 144,807 mercantile establishments.

For the improvement of Boston Harbor and of the port facilities the Commonwealth of Massachusetts has appropriated, within the last 22 years, the sum of $2,500,000 in addition to $9,000,000 of state bonds; and for the improvement of the New Orleans Port the State of Louisiana has, within the past year, voted an issue of $25,000,000 Port Commission Harbor Improvement Bonds.

The State of New York has incurred an expenditure of over $130,000,000 in the construction of the Barge Canal and in other improvements to navigation, the principal direct benefit of which will go to the city and port of New York.

PORT CHARGES

In the matter of port charges the following table, published by the United States Government (Department of Commerce—Miscellaneous Series No. 33—Ports of the United States—By Grosvenor M. Jones—Government Printing Office 1916) indicates that Philadelphia has a decided advantage over every other port with which it is compared.

This exhibit was prepared by Ford, Bacon & Davis, Engineers for the Board of Commissioners of the Port of New Orleans. The comparison was made for a hypothetical ship and cargo. In this instance a ship that had docked at New Orleans and was typical as to ship and cargo was taken as a basis. This vessel was rated as having a gross tonnage of 5,154, a net tonnage of 3,279, and a cargo space of 351,760 cubic feet, both inward and outward cargoes being of a miscellaneous character.

The following table shows the port charges computed on the above basis of facts that would have been levied on this ship and cargo at the ports of Galveston, Mobile, Philadelphia, New York and San Francisco, and in addition the charges actually assessed at New Orleans under the present system of rates:

Item	New Orleans	Galveston	Mobile	Philadelphia	New York	San Francisco
Pilotage	$283 00	$186 00	$254 00	$220 00	$173 04	$328 74
Towage	105 00	100 00	90 00	105 00	80 00	100 00
Local port charges	556 17	175 00	25 00	229 53	1,050 00	257 35
Tolls on cargo		2,372 50	1,512 57			595 37
Labor	3,648 70	3,632 12	3,755 96	3,134 63	3,015 00	4,193 65
Miscellaneous charges	11 52	31 44	65 52	16 00	16 00	20
Total expense, ship and cargo	$4,604 39	$6,497 06	$5,703 05	$3,705 19	$4,334 04	$5,475 31

LACK OF CO-OPERATION

One of the elements which in the past has been responsible for the slow growth of the business of the port of Philadelphia has been a lack of co-operation among the shippers, the railroads, and the city and port interests. A freight differential amounting to 24 cents per ton on grain in favor of Philadelphia, as against New York and Boston, would seem to be sufficient to attract the attention of shippers. A haul of 90 miles less than to New York and 200 miles less than to Boston, even at the lower rate as above noted, should induce the railroads to deliver to the nearer point, and as a matter of fact the export grain trade of Philadelphia has been and is of considerable volume. In the transport of other commodities, however, the port has not been treated so liberally.

In the matter of the transportation of cement, in the production of which Pennsylvania stands first, the railroads have established and maintain a higher rate from the cement producing territory in the eastern part of the state to Philadelphia than to New York, although the distance to the latter port is approximately 50 per cent greater. As a result of this policy the largest part of this traffic goes to the port of New York.

With regard to the large export trade in iron and steel products, coal and petroleum, as well as other more or less freely manufactured materials, the failure of the manufacturers and shippers to recognize the claims of their own seaport has resulted in the conveyance of a large part of these commodities by, and almost through, the city of Philadelphia, to another port entirely outside the state.

PUBLICITY

If the port of Philadelphia possesses the advantages which we have claimed for it, these advantages should be brought to the attention of every Pennsylvania manufacturer, merchant and shipper, through proper publicity, and an effort made to induce him to patronize the port within the borders of his own state, not merely because of state pride but because the general adoption of this policy would be reflected in an increased business and commercial prosperity extending into every industrial and agricultural community of the state.

INDIRECT VALUE OF SHIPPING INDUSTRY

The indirect value of the shipping industry to the people of the community may be inferred from the following, quoted from "The Port of Boston," by Edward J. Clapp, 1916: "Local Business the Result of Port Business. In 1913, 448 vessels in foreign trade carried cargo both in and out, expending (locally) $3,360,000. At $3,750 each, the 102 oversea steamers which came in with cargo and went out

light spent $380,000, or a total of $3,740,000. The more than 1,500 round trips of boats of regular coastwise steamer lines added probably $1,500,000, (making) a total of $5,240,000 expended in the port for handling, or an average of $17,500 per day."

PENNSYLVANIA BENEFITED BY IMPROVEMENT OF PORT OF PHILADELPHIA

The question may arise as to the benefit to the Commonwealth of increased commerce through the port of Philadelphia and the extent to which the State is likely to profit from this business.

If it be true, as is claimed by Prof. Clapp, in his exhaustive study of "The Port of Boston" heretofore referred to, that the beneficial affect of a port covers a zone of 500 miles radius, then all of Pennsylvania is a participant in the enlarged business and increased prosperity of the port of Philadelphia.

Another consideration which should have weight in the future development of Philadelphia as a port is its relation to the Atlantic Deeper Waterways Project, connecting the intra-coastal waters of the Atlantic seaboard by a system of canals capable of accommodating barges and other vessels of light draft. Portions of this system are already in operation. The completion of the middle sections would connect up the Delaware and the Susquehanna rivers, thus affording a means of bringing the products of a large portion of the interior of the state to Philadelphia and also to New York and other coast cities by water without transshipment of cargoes.

II. LAKE NAVIGATION

The one lake port in which Pennsylvania is directly interested is Erie. This port has one of the few natural harbors on the Great Lakes, and for many years was one of the most important shipping points on Lake Erie. The completion of railroad lines leading from Pittsburgh to the lake shore at points west of Erie has resulted in the diversion of a large amount of trade to these points and away from the port of Erie. Of the five railroads serving the city of Erie, the Pennsylvania is the only one which has terminals on the lake front. These docks are modern in construction and are equipped with cost saving cargo handlers of various types.

The history of the gradual diminution in the lake trade is read in the following figures, showing at average intervals of five years the principal receipts at the several ports:

LAKE COMMERCE—COMPARATIVE—PRINCIPAL ARTICLES

		1902	1907	1911
IRON ORE				
Ashtabula	tons	4,743,679	7,542,149	6,330,370
Buffalo	"	2,247,193	5,310,561	2,338,629
Cleveland	"	4,929,279	6,567,469	4,590,303
Conneaut	"	4,308,392	5,875,470	6,929,611
Erie	"	1,782,851	2,254,298	289,529
Fairport	"	1,488,592	2,444,704	637,082
Lorain	"	1,435,092	2,608,625	2,933,127
Ogdensburg	"			
WHEAT				
Buffalo	bus.	51,471,851	54,811,707	37,872,596
Cleveland	"	447,450	688,500	807,000
Conneaut	"			
Erie	"	1,473,200	3,553,572	201,000
Fairport	"	391,334	350,000	165,000
Lorain	"			
Ogdensburg	"	1,343,727	596,095	416,923
CORN				
Buffalo	bus.	21,893,731	27,973,846	29,162,120
Cleveland	"			289,500
Erie	"	30,095	926,500	172,500
Ogdensburg	"	2,798,164	4,295,034	3,575,736
OATS				
Buffalo	bus.	15,728,907	10,647,267	8,236,930
Erie	"			
Ogdensburg	"	752,924	294,000	572,500
FLOUR				
Buffalo	tons	1,082,804	906,146	728,672
Erie	"	199,975	185,630	134,119
Ogdensburg	"	12,491	20,284	7,332
***COAL**				
Ashtabula	tons	1,274,372	2,643,408	4,371,531
Buffalo	"	902,995	3,528,877	3,645,333
Cleveland	"	1,881,834	2,883,805	2,111,636
Conneaut	"	186,843	490,377	163,763
Erie	"	647,929	1,115,470	679,740
Fairport	"	176,319	389,681	374,632
Lorain	"	801,336	1,869,163	2,247,909
Ogdensburg	"	1,359		258
		5,852,987	12,920,784	13,594,882

*Note: Statistics since 1911 have not been collected by the United States Department of Commerce from which the figures given above were procured.

There should be no difference in the lake freights which would produce a discrimination against the port of Erie, and in view of the comparatively small difference in the railroad distance from Erie and other lake ports to Pittsburgh it would seem as though a development of the lake front, by the erection of modern piers and equipment and by the offer to rent them on reasonable terms to the railroads, ought to do much to restore this port to its former relative position of importance.

The advantages of a slightly shorter line and lighter grades from Pittsburgh to other ports west of Erie must be offset by compensating advantages in favor of Erie probably in the way of especially cheap dock rentals and harbor fees. These are questions which must be determined jointly by the State, the city of Erie and the railroads interested.

III. INLAND NAVIGATION

The question of inland navigation may be considered under two heads: the first, pertaining to those streams which are interstate in character, as the Delaware, the Ohio, the Monongahela, and to a lesser extent the Susquehanna; the second, pertaining to streams which are entirely within the state, among which are the Schuylkill, the Lehigh, almost the entire Susquehanna with its North and West branches, the Juniata, the Allegheny, the Kiskiminitas, the Youghiogheny, the Beaver, and some others.

During the early part of the last century a number of these streams were improved for navigation and each of them formed a part of the general system of water transportation undertaken and fostered by the State at a total expenditure of about $40,000,000. The limited cross-section of the canals which formed a part of this system, preventing the use of boats of a size and capacity which could be operated most economically, with the excessive costs of maintenance, were important factors in bringing about the abandonment of most of the system. The principal factor, however, was the rapid development of the railroads of the state, which early came into competition with the system of water transportation and which, by reason of their reaching from the source of production to that of consumption of the principal commodities which they transported, diverted traffic from the water routes. Ultimately most of the canals and river improvements fell into the hands of the competing railroad interests and were gradually abandoned. Had the water transportation system remained in the control of the State or in other control independent of its competitors for a period of years, or until the country had reached a higher degree of industrial development, such as the last decade or two has witnessed, the record of the water transportation system might have been a different and vastly more satisfactory one from the economic viewpoint.

As to the future possibilities of water transportation within the state, much may be learned by a study and comparison of what has been done in other countries and especially in European countries to develop and maintain a system of waterways suited to the needs of the country.

Recently the British Government appointed a Royal Commission to make a study of the canal and improved river systems of Europe. This Commission, after exhaustive investigation with unusual opportunities for securing information, made its report, one section of which, published in 1909, has to do with the waterways of France, Belgium, Germany and Holland. From this report many of the facts herewith set forth have been gleaned.

France, with an area and population about five times that of Pennsylvania, early began to improve the waterways. In 1847 there were 4,150 miles of navigable rivers and 2,350 miles of canals, making a total of 6,500 miles.

In 1905 the record was as follows:

	For Rafts	General Navigation	Total
Rivers and lakes (mi.)	1,820	5,470	7,290
Canals (mi.)		3,060	3,060
	1,820	8,530	10,350

Of the frequented lengths the relative ownership was as follows:

	Rivers	Canals
Owned by the State	4,469	2,860
Owned by corporations and public companies	6	150
	4,475	3,010

After having maintained a fairly complete system from 1820, in 1879 the entire system was reorganized, the program providing for the improvement of 2,500 miles of rivers, 2,250 miles of canals and the construction of 870 miles of new canals, at an estimated cost of $30,000,000 for rivers and $110,000,000 for canals.

This system was planned to provide for boats of 300 tons capacity and the minimum lock dimensions were:

Length	126 feet
Width	16.4 feet
Depth	5.9 feet

While this system has not been entirely completed by reason of the financial conditions of the country, yet the following will show that progress has been made:

LENGTH OF WATERWAYS IMPROVED BETWEEN 1878-1905

	Rivers	Canals	Total
1878	618	287	905
1905	1,306 (a)	1,671 (b)	3,977
Increase	608	1,384	2,072

(a) 1,100 miles canalized rivers.
(b) 215 miles lateral to rivers.

A number of these streams have a steep gradient, the effect of which is overcome by different engineering methods. On the River Rhone, covering a total navigable length of 205 miles, the total fall is 515 feet, or an average of 2.5 feet per mile. On the River Garonne, covering a total navigable length of 178 miles, the total fall is 415 feet, or an average of 2.33 feet per mile. Some sections of these streams show as high a gradient as 4.1 feet to the mile on the former and 4.7 feet on the latter.

In 1905 the water traffic amounted to 34,000,000 tons, the rail traffic to 139,000,000, only 800,000 tons being transshipped, this being due to a lack of interest and co-operation between government-owned waterways and corporation-owned railroads.

The average ice and flood interruption, together with repairs and other causes, varied from 0 to 74 days, the latter on the Canal de Bourgogne.

The streams which are navigated in France compare in size with the larger streams in Pennsylvania in their mean low water flow as follows:

Stream	Location	Mean Low Water Flow
		Cu. Ft. per Second
Seine	Paris	3,150
Garonne	Bordeaux	3,230
Garonne	Tonlouse	1,260
Lorne	Between Briare and Tours	1,230 to 1,300
Lorne	Nantes	8,160
Rhone	Below confluence with the Saone	8,500
Rhone	Below confluence with the Isere	12,600
Saone	Chalons	1,400
Yonne	Laroche	600
Marne	Above confluence with the Seine	500
Oise	At confluence with the Seine	820
Aisne	Above confluence with the Oise	320

Stream	Location	Mean Low Water Flow
		Cu. Ft. per Second
Susquehanna	Harrisburg	7,870
North Branch Susquehanna	Danville	2,820
North Branch Susquehanna	Wilkes-Barre	2,140
West Branch Susquehanna	Williamsport	1,370
West Branch Susquehanna	Renovo	470
Juniata	Newport	1,120
Delaware	Riegelsville	2,500
Schuylkill	Philadelphia	670
Lehigh	Bethlehem	686
Kiskiminitas	At mouth	560
Allegheny	At mouth	3,220
Monongahela	At mouth	2,200
Youghlogheny	At mouth	523

A comparison of the grade or fall of the principal Pennsylvania streams as compared with those of France indicates that there is comparatively little difference. The following table gives figures on a number of them:

Stream	From	To	Length	Total Fall	Average per Mile
			Miles	Feet	Feet
Delaware	Port Jervis	Easton,	71.5	261.0	3.6
Delaware	Easton	Head of tidewater	52.5	157.0	3.0
Schuylkill	Reading	W. Manayunk	61.0	180.0	3.0
Lehigh	Slatington	Allentown	17.5	113.0	6.5
Lehigh	Allentown	Easton	16.5	68.0	4.1
N. Br. Susquehanna	N. Y. Line	Wilkes-Barre	101.0	224.0	2.2
N. Br. Susquehanna	Wilkes-Barre	Northumberland	64.5	98.0	1.5
W. Br. Susquehanna	Curwensville	Renovo	80.0	491.0	6.1
W. Br. Susquehanna	Renovo	Lock Haven	28.0	102.0	3.6
W. Br. Susquehanna	Lock Haven	Northumberland	64.0	105.0	1.6
Susquehanna	Northumberland	Harrisburg	55.5	134.0	2.4
Susquehanna	Harrisburg	Maryland Line	56.5	225.0	4.0
Susquehanna	Maryland Line	Mouth	13.0	71.0	5.5
Juniata	Thompsontown	Mouth	23.0	53.0	2.3
Kiskiminitas	Saltsburg	Mouth	27.0	91.0	3.4
Allegheny	Franklin	Freeport,	96.0	215.5	2.2
Allegheny	Freeport	Mouth	27.7	40.5	1.5
Youghiogheny	Connellsville	Mouth	44.0	144.8	3.3
Monongahela	W. Va. Line	Mouth	91.6	77.8	0.8

The dry weather flow of many of the French streams is very considerably augmented by the storage provided through reservoirs constructed for this purpose, a feature which must be considered as one of the essentials in any general plan for improving the waterways of Pennsylvania.

The following illustrates the growth of water-borne and rail-borne traffic in France between the years 1880-1905:

Waterways increased in length from 6,782 miles to 7,483 miles, an increase of 10.4 per cent.

Railways increased in length from 14,315 miles to 24,459 miles, an increase of 71 per cent.

The total tonnage on waterways increased from 18 million tons to 34 million tons, an increase of 90 per cent.

The total tonnage on railways increased from 80.8 million tons to 139 million tons, an increase of 72 per cent.

Traffic in ton miles:

Waterways 154 per cent.

Railways 71 per cent.

Freight rates:

Average by rail—1.13 cents per ton mile.

Average by water—0.58 cents per ton mile.

In Germany the rivers have likewise been utilized to a very general extent in pursuance of a definite governmental policy. The total length of waterways with a registered traffic is 5,580 miles. These show a growth in traffic as follows:

	1875	1895	1905
Received (tons)	10,400,000	25,000,000	56,000,000
Dispatched (tons)	9,200,000	20,190,000	46,000,000

Net 1,000-ton miles:

On waterways—9,182,000 tons.

On main rivers—7,443,000 tons.

A comparison of the relative growth of traffic on the German waterways and railways shows the following:

	Waterways		Railways	
	Mileage	Tonnage	Mileage	Tonnage
1875	6,200	20,800,000	16,430	167,000,000
1885	6,200	27,600,000	22,940	200,000,000
1895	6,200	46,700,000	27,780	331,000,000
1905	6,200	103,400,000	33,730	588,700,000

In other words, while the traffic of the waterways on a fixed mileage had increased over 400 per cent, the traffic of the railways had increased 250 per cent with a mileage increase of 100 per cent. The water traffic had increased 400 per cent per mile, while the railway traffic had increased 125 per cent per mile.

The principal German rivers are larger than those of France, and the dry weather flow of most if not all of them has been increased through the construction of reservoirs on their headwaters, thus at the same time restraining the flood flow of the stream, preventing inundation, and benefiting agriculture.

The chief means used in the improvement of the rivers have been training works and groins; regulating and narrowing channels and increasing depth; cutting off side arms, straightening sharp bends, and in some cases constructing submerged groins to equalize the gradient, as, in the case of the French waterways, the gradient varies from less than one foot per mile to 4.75 feet, the latter being on the canalized rivers.

The stream flow of some of the principal rivers is as follows, registered at mean low water:

Stream	Location	Mean Low Water Flow
		Second-feet
Rhine	At Bonn	33,000
Weser	Below Bremen	5,300
Elbe	Below Lauenberg	9,170
Main	At Frankfort	2,500
Fulda	At Cassel	280
Saale	At Halle	1,070

The total length of the canalized rivers is 425 miles, the height overcome 633 feet, giving an average fall of 1.49 feet per mile.

The interruption to traffic on these waterways due to flood and ice conditions varies from 19 days on the Rhine to 64 on the Oder and 104 on the Vistula; on the canalized rivers and canals: in western Germany, 25 to 75 days, in central Germany, 50 to 90 days, in eastern Germany, 90 to 135 days. These periods of inactivity are approximately as long as would be the case in this state.

In Germany the rivers are public property. With few exceptions the canalization of the rivers and the construction of canals have been carried out by the state and are state-owned.

The causes which led to the development of Germany's system of waterways are stated briefly as follows, in the Report of the Royal Commission heretofore referred to:

"On the introduction of railways, Germany passed through the same experience as other countries. For a long period the waterways lost their importance in the development of the country.

"Renewed attention began to be paid to this means of transport in the early seventies.

"1st, because water carriage offered great advantages for many purposes of transport; and for many specially situated centers of industrial activity and consumption;

"2d, because the opinion gained more and more ground that the railways would be unable to cope with the great development of the traffic of the country, requiring the transport of goods in bulk;

"3d, because these goods could be transported more cheaply and economically by water; and

"Lastly, because the construction of both systems of carriage would tend to create and assure more favorable conditions for the development of the country."

Particular attention is directed to the 2d and last above reasons as being pertinent to the subject under consideration. Relative to the matters of cost of improvement (or construction) and maintenance,

the policy seems to be to regard the waterways as a part of a great transportation system, to be used for the benefit of the public, as are the public highways. In accordance with this policy the tolls are fixed at a very reasonable rate to encourage the more general use of the waterways. This is the policy which is pursued in this country everywhere with regard to highways and there is ground for argument that the waterways should be regarded in like manner.

In general the streams of Pennsylvania are not unlike the streams of France and of a portion of Germany; and while the present ratio of population in Pennsylvania is not equal to that of Germany, it approximates that of France. The German rivers are in some instances interstate in their character and compare in this particular with some of the larger rivers of Pennsylvania, as hereinbefore indicated.

The extent to which any or all of these rivers shall form parts of a system of water transportation in the future is somewhat problematical, depending upon the seriousness with which we consider the need of diversified systems of transportaion, the great matter of *conservation* as applied to our present fuel supply and the willingness of the rail transportation interests to co-operate with a system of water transportation when once established. These are essential elements in the success of any system of inland navigation as applied throughout the United States, and to this general statement Pennsylvania is no exception.

In pursuance of its general policy for improving navigation on our principal rivers, the Federal Government has slackwatered the Monongahela from Fairmont, West Virginia, to Pittsburgh, a distance of 131 miles; the Allegheny for a distance of 24 miles up from its mouth; and the Ohio from Pittsburgh to Wellsville, West Virginia, a distance of 76 miles, the same method being used for the two latter streams as the former. The general plan adopted provides for the continuation of the improvement of the Ohio throughout its entire length, and of the Allegheny for a total distance of 61 miles. These projects would afford 9-foot navigation on the Ohio, and four to seven feet on the Allegheny. The depth on the Monongahela is six feet or more; while up as far as No. 7 Lock, boats drawing eight feet of water move safely except for a very few days annually on account of high water and ice.

The greatest traffic is carried on the Monongahela and in Pittsburgh Harbor, and consists principally of coal, which is loaded onto the barges direct from the river mines, sand and gravel, the former furnishing 85 per cent of the 13,000,000 tons of annual traffic. The contribution to the traffic from along the short stretch of the Allegheny now slackwatered amounts to about 2,000,000 tons per year, and is similar in character to that which originates on the Monongahela.

Pittsburgh Harbor includes the stretch of the Ohio River for a distance of 4.7 miles above Davis Island Dam to Pittsburgh, seven miles of the Allegheny River between Pittsburgh and Aspinwall, and that portion of the Monongahela River between Pittsburgh and McKeesport, a distance of 15.5 miles, making a total of 27.2 miles. In this section the traffic is heavy, consisting principally of coal, sand and gravel. Of the river frontage the City owns 6½ miles, the railroads 26 miles, and other interests 21.9 miles. For many miles railroads border both sides of the river, thus preventing the use of the banks for landing purposes; at other places the rugged natural conditions are not conducive to the construction of wharves and docks nor for the serving of the same by a railroad or railroads.

The completion of the improvements to the Ohio River will prove a decided stimulus to Pittsburgh trade and commerce by water. Even in its present unfinished state, it is claimed that the traffic from the Ohio River (which is only about 6 per cent of the trade of Pittsburgh) constitutes over 90 per cent of the traffic on the Mississippi at Cairo. The improvements to the Ohio as above outlined, with the development of the Allegheny to Natrona, both of which projects are under the control of the United States Government, will demand an enlargement and improvement of terminal facilities. At the present time the city of Pittsburgh owns about 6½ miles of frontage along the several rivers, the railroads 26 miles, and other interests 21.9 miles, the railroads bordering the rivers on both sides for many miles, thus preventing the use of the banks for landing purposes. The construction of modern wharves or piers where possible and the securing of physical connections between railroads and wharves are improvements which should be planned and provided for.

One thing which could be done to still further improve navigation at Pittsburgh and on these rivers would be the inauguration of a general policy of stream regulation by the Commonwealth, the effect of which would be to reduce the flood heights of the rivers and increase the dry weather flow, both producing serious interruptions to navigation and trade.

With reference to the intrastate streams, heretofore enumerated, a comparison with similar waters in France and Germany leads to the conclusion that the time is coming in which they will be utilized for carrying to market the valuable natural and manufactured products found close to their banks; coal from the mines to the mills; limestone from the quarries to the furnaces; cement from the mills to the great centers of population and industry along the coast via improved rivers and the completed Atlantic Coast Deeper Waterway; building stone, sand and gravel, and iron ore and other raw materials from ship to furnace or factory as return cargo.

As in European countries, the improvement of the inland water routes has effected a decentralization of population, by making accessible desirable locations for manufacturing industries, with unlimited space, cheap land, improved housing conditions, utilization of water power and facilities for disposing of waste materials, and there is every reason to infer that a like result would obtain in this state.

A survey of the whole field leads to the conclusion that the development of a system of waterways within the bounds of the Commonwealth is a possibility of the future, and that when a comprehensive system of stream regulation for flood control has been put into operation the stream flow on all our rivers will be so changed as to make comparatively easy their utilization for transportation.

In view of what has been heretofore set forth we are of the opinion that the Commonwealth should appropriate sufficient money for the immediate completion of the general plans for the improvement of the port of Philadelphia, thus co-operating actively with the Federal Government and the city; that Pittsburgh should be aided in working out an improved water transportation system and terminal facilities; that the port of Erie should be rehabilitated and that steps should be taken for a thorough survey of the economic features of a system of inland water transportation such as suggested. The effect of these efforts would be to increase not only the business and prosperity of these localities, but, through them, of the entire Commonwealth.

CHAPTER III

PYMATUNING RESERVOIR PROJECT

During the year 1916 investigations and survey of this project, progress reports upon which have appeared in the Annual Reports of the Commission from 1912 to 1915 inclusive, were continued. The hydrographic studies indicated that the reservoir would be capable of so regulating the flow of the Shenango River as to provide at Sharon a discharge which at no time would be less than 400 cu. ft. per second. Had the reservoir been in operation during the flood of March 1913, the discharge at Sharon would have been reduced 33 per cent, equivalent to a reduction of 4 feet in the gage height, while in the entire Shenango and Beaver valleys it is estimated that 80 per cent of the damage due to this flood would have been prevented.

In order to observe conditions and make studies in the lower Shenango and Beaver valleys, headquarters were established at New Castle, Lawrence County. A branch office was maintained at Jamestown, Mercer County, where a portion of the corps would be near the reservoir site to make observations simultaneously with those in the lower valley. On April 1, 1916, the above offices were closed, the work combined, and an office opened at Greenville, Mercer County, close to the site of the proposed dam. The reasons for the change were: more nearly central location, good railroad facilities, practical completion of the studies in the lower Shenango and Beaver valleys and the investigation of the foundation of the proposed dam by means of test pits and borings.

FIELD WORK AND PROPERTY MAPS

The field work connected with the property surveys was completed early in 1916, when the inaccessible portions of the swamp were frozen, including several minor features, such as the location of tract lines, township lines and additional topography near the divide between the Shenango and Little Shenango rivers in the Pymatuning Swamp near Hartstown.

Levels were run from the bench marks of the 1912 survey to establish the elevations of permanent bench marks on concrete monuments, 44 in number, located near or adjacent to roads at points above the limits of the proposed reservoir.

The mapping of the property surveys, which covered an area of 36.4 square miles and required the measurement of the course and distance of about 250 miles of property lines enclosing the separate parcels, and the location of tract and township lines, was completed.

INVESTIGATION OF FOUNDATION AT PYMATUNING DAM SITE

Investigations were made previous to 1916 for the purpose of selecting a site for the dam, the preliminary examination being made in 1912 and additional surveys in 1914, at which time it was determined that the best location was at a point near the mouth of Sugar Run, about 2 miles north of the village of Jamestown.

A thorough investigation of the foundation at this site was started on September 1, 1916, comprising the digging of test pits for the purpose of obtaining samples of the strata and the rates of filtration through the different materials. Test holes were made at intervals of 50 feet across the valley by means of drive pipes sunk to bed rock. Cores of the materials encountered during the driving and samples of the materials obtained in the test pits were preserved for future reference. The investigation at the end of the year had not been completed, but up to that time had developed the fact that bed rock exists at

depths below the surface of the ground on the west side of the river varying from 7 to 40 feet, while on the east side the rock was found at lower levels gradually dipping away from the stream.

HYDROGRAPHIC INVESTIGATIONS

The nine rainfall stations and seven stream gaging stations established in connection with this project have been maintained, and additional information has been received weekly from one stream height and three rainfall co-operative observers. The results of these records are contained in the Appendix to this report. Self-recording gages were installed in the Shenango River at Turnerville, near the dam site; at the Chestnut Street Bridge in Sharon; and in the Little Shenango River at Greenville; for the purpose of obtaining simultaneous records during floods and determining more accurately the daily discharge.

The observations on the height of ground water within and surrounding the reservoir site have been continued, the data being collected at typical dug wells two or three times each month. Evaporation measurements have been made throughout the year by means of weekly observations on covered and exposed evaporation tanks adjacent to the rainfall station at Turnerville, and during the warm season from a floating evaporation pan installed in the reservoir of the Greenville Water Company and an open land tank located on the bank nearby.

The information indicated above formed the basis for the calculation of the variations in the level of the reservoir surface that would have occurred at the end of each month if the reservoir had been in operation to regulate the flow of the Shenango River. Fluctuations of the reservoir surface have been computed from 1908 to 1916 inclusive.

STUDIES OF CHANNEL CONDITIONS IN THE SHENANGO, MAHONING AND BEAVER RIVERS

Previous to the investigation of the regulating effect of the Pymatuning Reservoir on the Beaver River system, started in 1912, reliable hydraulic data relative to stream flow and channel conditions were meager. Previous to 1912 observations of stream height had been recorded at two points in the valley. Continuous records were available for the Beaver River at the Hartman Dam of the Beaver Valley Water Company from June 1, 1908, but no discharge measurements had been made to rate the gage or to determine the coefficient of discharge for the dam. On the Shenango River at Sharon a gage was established by the Carnegie Steel Company, at the Chestnut Street Bridge, on September 1, 1909, at which daily records of stream height had been taken and meter measurements made to determine the discharge, the record being continuous from January 1, 1910.

Since the beginning of the investigation of the Pymatuning Reservoir Project, 340 current meter measurements have been made to determine the discharge of the Beaver River and its tributaries. The time required for floods to crest along the streams at various points, and the result of the combination of such floods at the mouths of the tributaries has been observed. As the Shenango is joined at New Castle by Neshannock Creek, its largest tributary, and three miles below combines with the Mahoning to form the Beaver, the various combinations of floods on these streams have been studied in connection with the regulation which will be afforded by the storage reservoir.

Flood records were investigated and an inventory made of extraordinary floods in the Shenango and Beaver valleys from 1806 to 1916. Fragmentary data possessed by railroads, communities and individuals were collected and levels run to reduce the information to mean sea level, and additional information obtained of channel conditions, high water marks and flood slopes.

Detailed studies of portions of the channels of the Beaver, Shenango and Mahoning rivers were made, their capacities computed and plans for channel improvement outlined. This work included the examination of portions of the channels aggregating 23 miles in length, distributed as follows: On the Beaver River from the Ohio River to the Hartman Dam, and from Newport to the junction of the Shenango and Mahoning rivers, the channel was investigated for a distance of 10.8 miles. In the city of New Castle and vicinity the channels of the Mahoning and Shenango rivers and Neshannock Creek, for a total distance of 9.6 miles, were given careful study and calculations were made for the purpose of determining the width and depth of channel necessary to discharge flood flow. At Sharon, where changes in the channel of the Shenango River are contemplated, surveys were made over a length of 2.6 miles.

Under the plans worked out as a result of these studies the Commission has information at hand to permit it to act upon applications for proposed obstructions in accordance with a definite general plan for the ultimate improvement of the channels in these congested sections of the valley and the eventual reduction of flood height and flood damage.

CHAPTER IV

FLOOD WARNING AND PRECIPITATION

INTRODUCTION

During the year 1916 few high stages were experienced in the rivers of Pennsylvania and little damage occurred from floods on the large streams.

The stations established for flood warning purposes, listed in Tables 23 to 26, inclusive, on pages 106, 107 and 108 of the 1914 Report, have, with three exceptions, been continuously maintained.

The Buffalo, Chest Creek and Conshohocken stations were discontinued. One additional station was established on the North Branch Susquehanna River at Binghamton, N. Y., in 1915 and in 1916 arrangements were made with The Pennsylvania Railroad Company to have gage heights observed on the North Branch Susquehanna River at Nanticoke, Creasy and Catawissa during high stages. When sufficient data is collected at those locations, the Water Supply Commission will be able to predict stages to be expected at seven locations on the North Branch.

A station was established, in co-operation with The Pennsylvania Railroad Company, on the Frankstown Branch Juniata River at Williamsburg; gage heights are being observed in co-operation with the Philadelphia & Reading Railway Company on the Susquehanna River at Sunbury, and crest stages are being referenced by the New York Central Railroad Company at Karthaus on the West Branch Susquehanna River.

Owing to the low stages which prevailed in the Lehigh and Schuylkill rivers throughout the year, there was very little data collected of value in flood warning studies.

FLOOD WARNINGS—1916

The streams of the Ohio Basin rose rapidly on the 2d and 3d of January and passed flood stages at a few locations, though no material damage occurred. The Monongahela River rose about 13.5 feet to a stage of 30.0 feet at South Brownsville, and the stage of the Allegheny River increased about 9.5 feet to a gage height of 17.8 feet at Freeport, which resulted in a stage of 20.7 feet at Pittsburgh, 22.0 feet having been predicted by the United States Weather Bureau.

A comparison with previous records shows that it was the coldest March during the past 28 years, excepting that of 1896 which was practically the same, and the snowfall was abnormally heavy except

in a few localities along the southern border. On the 27th, 28th and 29th the snow melted rapidly, due to heavy rains and rising temperature, and the streams of the Ohio and Susquehanna basins were raised to or above flood stages, while over the Delaware Basin the rains were not as heavy and the run-off was held back, to some extent, by the snow which absorbed much of it, thereby causing only moderate rates of discharge.

The Allegheny River was the principal factor in producing a high stage in the upper Ohio River, rising about 17 feet at Freeport to a gage height of 25.8 feet, which resulted in a stage of 21.8 feet at Pittsburgh, there having been a stage of 24.0 feet predicted for that locality by the United States Weather Bureau.

There was a general rise in the streams throughout the Susquehanna Basin, the North Branch Susquehanna River and the Juniata River being the ones most seriously affected. At Wilkes-Barre the North Branch Susquehanna River rose about 22 feet to gage height 26.8 feet, which was 8.8 feet above flood stage; on the West Branch Susquehanna River there was a rise of about 16 feet at Williamsport to gage height 20.5 feet; and the Juniata River at Newport rose about 12 feet to stage 20.0 feet, which was the highest water experienced at that location since March 1908. At Harrisburg the Susquehanna River rose about 13 feet to a gage height of 18.6 feet.

The following table shows the stages predicted and those actually reached 24 to 36 hours later:

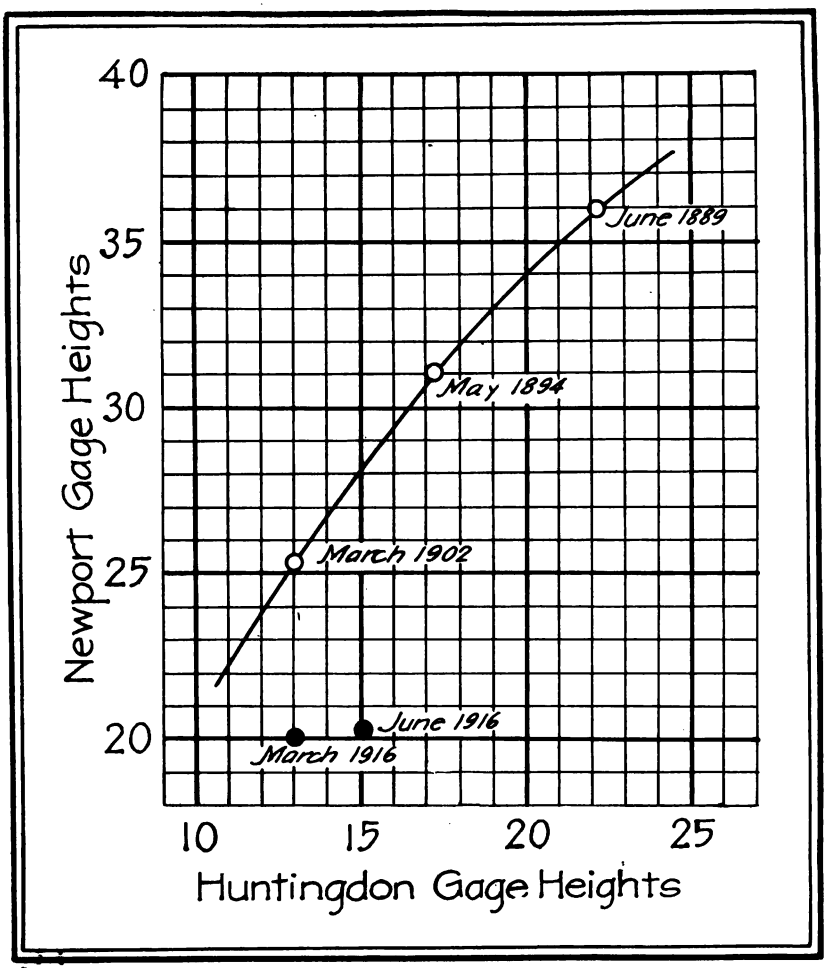
TABLE NO. IV

Predicted and Actual Stages Reached March 27—April 2, 1916

Location	Stream	Predicted Stage	Maximum Stage
Corning	Chemung river	15.0	14.9
Binghamton	Susquehanna river, North Branch	17.0	16.6
Towanda	Susquehanna river, North Branch	18.5	18.5
Wilkes-Barre	Susquehanna river, North Branch	26.5	26.8
Danville	Susquehanna river, North Branch	21.0	21.8
Clearfield	Susquehanna river, West Branch	8.0	8.7
Renovo	Susquehanna river, West Branch	15.0	15.9
Lock Haven	Susquehanna river, West Branch	12.0	14.8
Jersey Shore	Susquehanna river, West Branch	25.0	23.0
Williamsport	Susquehanna river, West Branch	22.0	20.5
Lewisburg	Susquehanna river, West Branch	20.0	18.1
Huntingdon	Juniata river, Frankstown Branch	13.5	12.9
Mount Union	Juniata river	(*)	No gage
Lewistown	Juniata river	21.0	Not recorded
Mifflintown	Juniata river	26.0	Not recorded
Newport	Juniata river	25.0	20.0
Harrisburg	Susquehanna river	17.0	18.6

Note—*Flood of the same magnitude as March, 1902.

PLATE I



Flood Crest Relations on Juniata River, Huntingdon—Newport

There was a general breaking up of the ice on the West Branch Susquehanna River during this period which gorged at several locations in the upper reaches, augmenting water surfaces to higher elevations than had been anticipated and thereby holding back portions of the flow, producing lower stages than had been expected throughout its lower course.

At Wilkes-Barre, on the North Branch Susquehanna River, which was the only locality where serious inundations were expected to occur and the only locality in the State which experienced an exceptionally high river stage during the year, the predicted stage was remarkably well fulfilled by the maximum stage which occurred, while at Newport on the Juniata River, the predicted stage of 25 feet was far from being realized. Few high stages have been experienced on the Juniata River during recent years and a paucity of data has been collected, applicable to use for flood warning purposes, since extensive changes have been made in channel conditions by the abandonment of canals and changing of railroad alignments.

The March flood of 1902, which rose to a gage height of 13.0 feet at Huntingdon and crested at a stage of 25.3 feet at Newport, was used as a criterion for the predictions of the March flood of 1916; however, a stage of 12.9 feet was reached at Huntingdon, which was practically the same as the 1902 flood, but resulted in a stage 5.3 feet lower than that of 1902 at Newport as shown on Plate No. I, page 41.

During the early part of April the Delaware River reached its highest stage for the year, having attained a gage height of 14.9 feet at Phillipsburg, N. J., on the 3d, which was the lowest maximum stage that had occurred at that locality since 1912, and, with but three exceptions, was the lowest yearly maximum recorded for 12 years, being only 3.8 feet above the minimum annual flood stage and about 22 feet below the great flood of October, 1903, at that location.

A noteworthy feature was the snowfall on the 8th and 9th of April, which was general throughout the State and unusually heavy considering the season. The average amount for the two days was 5.6 inches, the greatest fall having occurred at Coatesville, Chester County, the total being 15.4 inches.

On the 13th and 14th of the month there was an average rainfall of about 1.5 inches over the North and West Branch Susquehanna River drainage areas, which caused appreciable increased stages in those streams. The Juniata River was not materially affected, there being a rise of less than two feet at Newport. The North Branch Susquehanna River rose about 8 feet at Wilkes-Barre to a gage height of 19.0 feet; the West Branch Susquehanna River rose about 9.5 feet

at Williamsport to a stage of 14.8 feet, and there was a rise of about 6 feet on the main Susquehanna River at Harrisburg to gage height 13.4 feet.

The predicted stages and those which actually occurred are shown in the following table:

TABLE NO. V

Predicted and Actual Stages Reached April 14-16, 1916

Location	Stream	Predicted Stage	Maximum Stage
Corning	Chemung river	13.0	12.7
Binghamton	Susquehanna river, North Branch	10.0	10.2
Towanda	Susquehanna river, North Branch	13.0	13.2
Wilkes-Barre	Susquehanna river, North Branch	20.0	19.0
Danville	Susquehanna river, North Branch	16.0	16.0
Clearfield	Susquehanna river, West Branch	5.0	5.0
Renovo	Susquehanna river, West Branch	11.0	10.5
Lock Haven	Susquehanna river, West Branch	8.0	6.7
Jersey Shore	Susquehanna river, West Branch	16.5	15.1
Williamsport	Susquehanna river, West Branch	15.0	14.8
Lewisburg	Susquehanna river, West Branch	13.0	13.4
Harrisburg	Susquehanna river	13.0	13.4

The average rainfall for the State of Pennsylvania during the month of June was 6.14 inches, or 2.09 inches more than the June normal. An excess was recorded in nearly all parts of the State, though it was greatest in the central counties. The Susquehanna Basin received practically double its normal amount, the greatest rainfall for the month being 12.45 inches at Austin, Potter County.

During the month of June there were two freshets in the Susquehanna Basin, caused by unusual amounts of precipitation. The first, which occurred during the early part of the month, principally affected the West Branch Susquehanna River. There was an average rainfall of about 2.6 inches over the drainage basin, which caused a rise of about 12 feet at Williamsport and a rise of about 5 feet at Harrisburg on the main Susquehanna.

The following table shows the stages predicted and those which were actually reached:

TABLE NO. VI

Predicted and Actual Stages Reached June 3-5, 1916

Location	Stream	Predicted Stage	Maximum Stage
Clearfield	Susquehanna river, West Branch	8.5	7.8
Renovo	Susquehanna river, West Branch	13.0	12.7
Lock Haven	Susquehanna river, West Branch	9.0	9.8
Jersey Shore	Susquehanna river, West Branch	18.0	18.0
Williamsport	Susquehanna river, West Branch	16.0	16.2
Lewisburg	Susquehanna river, West Branch	14.0	13.4
Harrisburg	Susquehanna river	10.0	9.7

The second June freshet was more general over the Susquehanna Basin, although the North Branch was not affected above its confluence with the Chemung River, and the West Branch was slightly affected above the mouth of Sinnemahoning Creek.

Excessive precipitation occurred over the Chemung River drainage area on the 16th and 17th, 3.8 inches having fallen in four hours at Ulysses, Potter County, which is located near the watershed between the Chemung and Genesee rivers. Several of the streams tributary to the Chemung River were at higher stages than during the June flood of 1889, and the gage height on the Chemung River at Corning, N. Y., was within 1.3 feet of the height reached at that time, which resulted in a rise of about 10 feet at Wilkes-Barre to stage 17.0 feet.

There was an average rainfall of about 3.8 inches over the West Branch Susquehanna River Basin, which caused a rise of about 15 feet at Williamsport to stage 21.0 feet; over the Juniata River Basin there was an average precipitation of about 3.5 inches, which caused a rise of about 14 feet at Newport to gage height 20.2 feet; and at Harrisburg on the main Susquehanna River there was a rise of about 9 feet to stage 16.2 feet.

The following table shows the stages predicted and those which actually occurred from 24 to 36 hours later:

TABLE NO. VII

Predicted and Actual Stages Reached June 17-19, 1916

Location	Stream	Predicted Stage	Maximum Stage
Corning	Chemung river	17.5	18.7
Towanda	Susquehanna River, North Branch,	14.0	12.6
Wilkes-Barre	Susquehanna river, North Branch	21.0	17.0
Danville	Susquehanna river, North Branch	17.0	14.1
Renovo	Susquehanna river, West Branch	15.0	14.6
Lock Haven	Susquehanna river, West Branch	12.0	14.2
Jersey Shore	Susquehanna river, West Branch	25.0	24.0
Williamsport	Susquehanna river, West Branch	22.0	21.0
Lewisburg	Susquehanna river, West Branch	20.0	17.8
Huntingdon	Juniata river, Frankstown Branch	15.5	15.0
Mount Union	Juniata river	*	No gage
Lewistown	Juniata river	21.0	Not recorded
Mifflintown	Juniata river	26.0	Not recorded
Newport	Juniata river	25.0	20.2
Harrisburg	Susquehanna river	18.0	16.2

Note—(*) Flood of the same magnitude as March, 1902.

Again the predicted stage for Newport on the Juniata River was about 5 feet in error, and an analysis of the March and June floods of 1916 on the Juniata River exhibit a striking example of the inconsistencies which confront a flood warning system.

Plate I on page 41 shows a flood crest relation curve between Huntingdon and Newport, using the floods of June 1889, May 1894 and March 1902. Huntingdon is located on the Frankstown Branch

Juniata River, about 70 miles above Newport and about four miles above the confluence of the Frankstown and Raystown branches, and when considering that the Raystown Branch, with a drainage area of about 1,000 square miles, or approximately one-third of the total drainage of the Juniata River, contributes to the Juniata between the two stations, the relation curve for high stages would seem extremely well defined.

Using the crest relation curve, a gage height of 12.9 feet, which occurred at Huntingdon during the March flood, would indicate a gage height of 25 feet for Newport and the stage of 15 feet, which was reached at Huntingdon during the June flood, would be expected to result in a stage of over 28 feet at Newport; however, gage heights of 20.0 and 20.2 feet respectively were the maximum stages recorded at Newport.

A further study of these two floods shows that the gage height at Huntingdon was 2.1 feet higher in June than in March, which probably increased the discharge about 16,000 second-feet at that location, while at the Saxton gaging station, located on the Raystown Branch Juniata River, the discharge was about 6,000 second-feet less than in March, leaving a balance of 10,000 second-feet, which represents the increased flow of the June flood; however, the gage height at Newport was increased only 0.2 of a foot above that of the March flood, yet the magnitude of the March flood in the Juniata River increased by 10,000 second-feet should increase the gage height at Newport two feet instead of two-tenths of a foot.

It is impossible to predict expected stages for any locality situated below the confluence of two or more large streams by stereotype methods. Neither crest relation curves nor empirical formulas can be relied upon, which makes the factor of personal judgment necessarily large, and flood warnings for such locations, if timely given, should not always be expected to be within a foot of the maximum stages actually reached.

Harrisburg is an excellent example of such a locality, it being located on the main Susquehanna River about 55 miles below the confluence of the North and West branches and about 15 miles below the mouth of the Juniata River, which has a tributary drainage area of about 3,500 square miles. During the construction of the sanitary dam and the new Cumberland Valley Railroad Bridge in the Susquehanna River below the Harrisburg gaging station, work on which was begun in 1913 and finished in the fall of 1916, backwater materially affected the Harrisburg gage heights and the shifting relations between discharge and gage heights could not be determined from the time of one flood to another.

The highest stages for the year in the Lehigh and Schuylkill rivers occurred on the 26th of July. The Lehigh River reached a gage

height of 9.7 feet at Bethlehem, which was only 3.1 feet above the minimum annual flood stage and 16.2 feet below the February flood of 1902. A stage of 10.0 feet was reached on the Schuylkill River at Reading which was, with but four exceptions, the lowest yearly maximum height attained in 15 years.

PRECIPITATION

Four additional precipitation stations were established by the Water Supply Commission during the year 1916, which are located at Carlisle, Cumberland County; Coatesville, Chester County; Graters Ford, Montgomery County; and Karthaus, Clearfield County. The 24 stations established by the Water Supply Commission, two of which are located in Ohio, are described in the following table:

TABLE NO. VIII

Precipitation Stations Established by Water Supply Commission

Location	County	Approximate Elevation	Established	Observer	Observations
Carlisle	Cumberland	----	Jan. 1, 1916	C. E. Miller	Once daily, p. m.
Claridge	Westmoreland	1080	July 13, 1914*	W. S. Kemerer	Twice daily
Cloe	Jefferson	1415	Nov. 18, 1913	Buffalo, Rochester and Pittsburgh Ry. Co.	Twice daily
Coatesville	Chester	490	Oct. 22, 1916	City of Coatesville	Twice daily
Creekside	Indiana	1105	Nov. 18, 1913	Buffalo, Rochester and Pittsburgh Ry. Co.	Twice daily
Cresson	Cambria	2215	Oct. 29, 1913	Cresson Sanatorium	Twice daily
Eagles Mere	Sullivan	2060	Dec. 1, 1913	E. S. Chase	Twice daily
Falls Creek	Jefferson	1495	Oct. 23, 1913	Buffalo, Rochester and Pittsburgh Ry. Co.	Twice daily
Graters Ford	Montgomery	----	Jan. 1, 1916	I. H. Smoyer	Twice daily
Hadley	Mercer	1050	Jan. 1, 1914	Mrs. C. O. Powell	Once daily, a. m.
Harrisburg	Dauphin	405	July 13, 1914	Water Supply Commission	Twice daily
Karthaus	Clearfield	----	Oct. 1, 1916	The New York Central R. R. Co.	Twice daily
Ketner	Elk	1780	Nov. 18, 1913	Buffalo, Rochester and Pittsburgh Ry. Co.	Twice daily
Kinsman, Ohio	Trumbull	925	Jan. 1, 1914	A. B. Allen	Once daily, a. m.
Linesville	Crawford	1110	Feb. 25, 1912	Mrs. H. M. Patterson	Once daily, a. m.
Murrysville,	Westmoreland	900	July 14, 1914*	James Cruikshank	Twice daily
Pennline‡	Crawford	1030	Dec. 1, 1914	Miss Retta Crumb	Once daily, a. m.
Summit	Crawford	1150	Jan. 24, 1914	L. E. Dickey	Once daily, a. m.
Trafford	Westmoreland	800	July 13, 1914*	A. Hackenbery	Twice daily
Transfer	Mercer	1020	Feb. 4, 1914	H. L. Polley	Once daily, a. m.
Turnerville	Crawford	1045	Feb. 27, 1912	S. A. Marvin	Once daily, a. m.
Union City	Erie	1200	Dec. 29, 1913†	Department of Fisheries	Twice daily
Westford	Crawford	1100	Nov. 13, 1913	C. C. Collins	Once daily, a. m.
Williamsfield, Ohio	Ashtabula	1080	Jan. 1, 1914	Mrs. Kate Leonard	Once daily, a. m.

*Discontinued August 31, 1915. †Discontinued August 31, 1916. ‡Dec. 24, 1913 to Nov. 30, 1914, inclusive, this station was located at Padanaram, Ohio.

The daily, monthly and annual precipitation observed at the Water Supply Commission stations from dates of establishment to December 31, 1915, inclusive, were published in Table No. 15, pages 62--95 of the 1915 Report.

The daily, monthly and annual precipitation observed during the year 1916 are shown in the following table:

TABLE NO. IX

Daily, Monthly and Annual Precipitation

Daily Precipitation for January, 1916

Station	Day of Month																													Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Carlisle	.10	.20	----	----	.03	----	.02	----	----	.17	.02	.22	.38	----	----	.01	.02	----	----	.08	.03	.10	----	----	----	.02	.05	----	T	.44	.05	1.94
Cloe	.16	.27	T	T	.18	.22	T	----	----	.30	.17	.42	.24	----	----	.08	.06	----	----	.17	.42	.24	----	----	----	----	.04	----	----	.71	.09	3.77
Creekside	.20	.30	----	----	.10	.20	----	----	----	.35	.30	.60	.20	----	----	.05	----	----	----	.25	.12	.25	----	----	----	----	----	----	----	.20	.10	3.22
Cresson	----	.34	.01	----	.05	.22	----	----	----	.18	.14	.41	.16	.03	----	.07	.05	----	----	.37	----	.16	----	----	----	----	.02	----	----	.03	.32	3.19
Eagles Mere	.33	----	----	----	.35	----	----	.04	----	----	----	----	1.10	----	----	.09	----	----	----	----	----	----	----	----	----	----	----	----	----	----	*.70	2.61
Falls Creek	.10	----	----	----	.30	.10	----	----	----	.10	.10	.40	.10	----	----	----	----	----	----	----	.40	.20	----	----	----	----	----	----	----	.50	.10	2.40
Graters Ford	----	.37	----	----	.04	----	----	----	----	.22	----	.05	.25	----	----	.01	T	----	----	.05	T	.10	----	----	----	.04	----	----	----	.25	.03	1.41
Hadley	.15	.55	----	----	.25	.15	----	----	----	.12	.15	.13	.25	----	.10	----	----	----	----	----	.53	----	----	----	----	----	.03	----	----	.30	.13	2.84
Harrisburg	.04	.29	----	----	.02	----	T	----	----	.25	.02	.19	.40	----	----	.02	.06	----	----	.08	----	.08	----	----	----	----	.03	----	----	.44	.01	1.93
Ketner	.08	.35	.01	----	.28	.15	----	----	----	.20	.05	.42	.20	T	----	.06	.01	.01	----	.09	.37	.31	----	----	----	----	----	.01	T	.22	.13	2.95
Kinsman	.10	.65	----	----	.18	.17	----	----	----	.06	.04	.18	.45	----	.05	----	.05	----	----	.02	.25	.04	----	----	----	----	T	----	----	.28	.17	2.69
Linesville	.15	.43	----	----	.22	.25	----	----	----	.05	.03	.13	.37	.05	.05	----	.18	.05	----	----	.19	.06	----	----	----	----	----	.05	----	.15	.17	2.58
Pennline	.06	.63	----	.02	.26	.18	----	----	----	.05	.03	.15	.50	.12	.05	.02	.03	.05	----	----	.30	.05	T	----	----	----	----	.04	----	.19	.21	2.94
Summit	.09	.57	----	T	.28	.21	----	----	----	.07	T	.08	.47	.25	.10	.05	.15	.05	----	T	.32	.05	----	----	----	----	----	----	----	.25	.16	3.16
Transfer	.13	.63	----	----	.19	.16	----	----	----	.07	.13	T	.41	----	T	----	.05	----	----	T	.47	T	T	----	----	----	----	.04	----	.45	.07	2.83
Turnerville	.06	.60	----	----	.27	.17	----	----	----	.13	.04	.12	.35	.12	.02	.01	.05	----	----	----	.28	.06	----	----	----	----	----	.05	----	.11	.17	2.61
Union City	.22	.37	.01	----	.45	.09	----	----	----	.13	----	.16	.32	.06	----	.01	T	----	----	.10	.30	.05	----	----	----	----	.04	----	----	.21	.28	2.80
Westford	.08	.55	----	----	.25	.19	----	----	----	.03	.03	.17	.35	.10	----	.10	.10	T	T	----	.21	.05	----	----	----	----	----	.06	T	.16	.16	2.59
Williamsfield	.09	.65	----	----	.22	.21	----	----	----	.02	----	.15	.50	.03	.05	----	.01	.05	----	----	.24	.02	----	----	----	----	.02	----	----	.25	.15	2.66

*Total for 2 days.

Daily Precipitation for February, 1916

Station	Day of Month																												Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	
Carlisle	T	.87	.05		T	.05					T	.59	.70				T	T	T	T			T	.88	.10		.02			3.26
Clos	.40	.13	.04		.02	.17	.02		.28			.13	.30				.06	.07		.07			.05	.32	.62	.07				2.78
Creekside						.19			.35			.23	.21				.10	.13		.08			.10	.30	.78		.07			2.54
Cresson	.09	.29	.07	.01		.22	.07		.25		.08	.35	.68				.15	.05	.03	.04				.05	.57	.10	.04			3.14
Eagles Mere	.40	.46				.17		.35					.53					.26		.09						1.26	.07		.28	3.87
Falls Creek	.43	.20	T		T	.25	.05	T	.34	T	T	.13	.27				.03	.14	T	T			T	T	1.10	T	.14	T	T	3.08
Graters Ford	.10	.89	.29				.01					.89	.25					.03			.01				.94	.09				3.50
Hadley	.05					.10	.15		.25				.10						.09	.05			.05		.55	.15	.10	T		1.64
Harrisburg	.16	.80	.09			.02					T	.50	.63				.02			.01					1.05	.02	.03		T	3.36
Ketner	.25	.12	.04	T	.05	.19	.02	.04	.25	.02	.01	.10	.05				.05	.17		.12			.03	.09	.89	.05	.05	.03	T	2.62
Kinsman	.13			.05		.05	.25		.07										.19	.03			.07		.72		.10	.02		1.58
Linesville	.07	.06	.15	.05	.02	.05	.15		.27	.06		.05	.10						.17	.12			.20		.81		.35	.10		2.78
Pennline	.18		.02	.03	.04	.10	.21	.02	.13		.10		.10				.03	.03	.06	.18	.02		.07		.90	.15				2.37
Summit	.12		.10	.05	.10	.15	.20	.05	.20		.15	.02	.05				.02	.07	.05	.10			.13	T	.85	.15	.10	.07		2.73
Transfer	.16					.02	.13	.02	.11									.02	.02	.02			.16		.70	.05	.07		.10	1.58
Turnerville	.12			.05	.05	.03	.16		.07	.02			.05				.02		.10	.10			.09		.74	.10	.05			1.75
Union City	.14		.01		.07	.15	.03	.09	.14	.03	.05	.09					.01	.09	.03	.03			.70	.10	.58	.06	.18	.01	T	2.59
Westford	.16	T	T	T	.05	.02	.20	T	.07	T	T	T	.08						.07	.07			.10		.83	.01	.15			1.81
Williamsfield	.11				.04		.28		.11										.13	.04			.04		.91			.04		1.70

Daily Precipitation for March, 1916

Station	Day of Month																													Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Carlisle	T	.26				.31		.32		T			T	T	.76			.06		T	.16	.96					.02	1.42	.62	.06		4.95
Clos		.20				.46	.40	.07		.04					.85						.13	1.07					.36	.42	.03			4.03
Creekside		.25				.36	.33	.10		.08					.75						.23	.96					.28	.54				3.88
Cresson		.28	.02			.60	.19	.07	.02	.04	.02				.80				.12			1.40	.01				.96	.60	.45			5.58
Eagles Mere		.34				.86		.85	.56	.50					2.50			.08		.22		.78					.26	.14				7.09
Falls Creek		.24				.92	.30	.10	T	.15		T		T	.98			T	T			.80					.46	.43				4.38
Graters Ford		.08					.60	.22						T		.52			.04		.08		.70						1.21	.02		3.47
Hadley		.30				.30	.74	T	.05	.10		.02			1.00	.15	.15				.27	.32	.37					.06	.04			3.87
Harrisburg		.15				.43		.29		T					.68				.04		.14	.92					.03	1.35	.65			4.68
Ketner	.01	.20		.01	.02	.67	.35	.11	.01	.35			.02	.05	.75			T	.02	T	.13	.63	.01				.17	.48	.05			4.04
Kinsman		.25				.35	.61	.03		.10	.05				1.00	.10	.05				.35	.36	.41					.07				3.73
Linesville		.20				.20	.44	.05	.10	.30	.20				1.00	.10			.03		.30	.20	.55					.14				3.81
Pennline		.30		T		.21	.32	.10	.08	.22	.05	.05	.01		1.00	.18	.10		.05		.15	.35	.46				T	.13				3.76
Summit		.40				.30	.33	.10	.10	.15		.10			1.00	.20	.03		.02	.20	.20	.15	.50					.06				3.84
Transfer		.40				.35	.77	T	T	.11	T				1.00	.10					.25	.60	.26					.13				3.97
Turnerville		.25		.08		.30	.48		.05	.20	.08	.02	.01		1.00	.10	.10				.25	.25	.18					.11				3.46
Union City		.11				.10	.45	.07	.05	.05		.03			.29		T		.04		.09	.65	.02					.21				2.16
Westford		.15		T	T	.25	.47	.05	.08	.22	.05	.05			1.00	.05	.10				.15	.47	.30				T	.10				3.49
Williamsfield		.22				.22	.46	.04		.16		.02			1.00	.06	.04				.29	.41	.48					.08				3.48

Daily Precipitation for April, 1916

Station	Day of Month																													Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Carlisle				.15				.77	.11			.05	.02	.18			.06		.05		.50	.56	T		.13	T	.37				2.95
Cloe	.05	.23	.04	.11				.34	.11		.07		.06	.83			.23		.12		.13	.04	.11		.33			.03			2.83
Creekside		.24						.20	.10					.70			.12				T	.52	.10		.32		.10				2.40
Cresson		.21	.10	.12		.01		.80	.21				.30	.76			.03		.05	.02	.50	.30	.10		.52		.18	.12			4.33
Eagles Mere				.37					*.71		.22		.23	1.17			.05			.35			1.41			.11		.63			5.25
Falls Creek		.20	T	T		T		T	T		T			1.05			.16		.10	.12	.09	.80	T		.20		.12				2.84
Graters Ford				.03			.02		.98			.03	T		.62		.07					.55	.10			.21		.16	T		2.77
Hadley		.10						.20	.22			.06	.02	.60	.04		.54	.10		.33	.32	.50	.10		.10	T	T	.32			3.55
Harrisburg		.03		.08				.55	.15			.02	.01	.49			.03				1.06	.23	.02		.10		.20	.02			2.99
Ketner	.13	.02	T	.04		T		.13	.07		.08	T	.10	1.46	.01		.17	.11		.41	.10	1.21	.19	T	.21	.13	.13	T			4.70
Kinsman		.08						.06	.34			.06		.52			.41	T		.53	.24	.79	.08	T	.09	T	.03	.16	T		3.38
Linesville		.08							.40	.02		.04		.34	.03		.47	.04		.43	.17	1.03	.16		.06			.15			3.42
Pennline		.07						.08	.20	.02		.04	.04	.55	.04		.25			.34	.18	1.26	.12	T	.17	T	.03	.07			3.46
Summit		.07						T	.40				.05	.25	.10		.30			.39	.59	1.07	.25				.05	.11			3.63
Transfer		T				T		.10	T				T	.59			.38			.35	.32	.52	.14				T	.46			2.86
Turnerville		.12						.05	.33			.06	.02	.54	.02		.41			.30	.32	.61	.19		.07		.02	.18	.02		3.26
Union City	.12							.05	.03		.09		.22	1.07			.72		.08	.60	.04	.88	.10	.02	.15	.11	.75	.02			5.05
Westford		.09				T		.15	.22			.06	T	.48			.41	.03		.37	.13	.78	.19	.01	.12	T	.03	.15			3.22
Williamsfield		.05						.07	.31				.03	.45			.36			.45	.10	1.05	.17		.08		.03	.15			3.30

*Total for 2 days.

Daily Precipitation for May, 1916

Station	Day of Month																													Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Carlisle	----	----	T	.23	T	----	.11	.06	----	----	----	----	----	----	----	.03	.56	T	.03	----	----	T	.85	T	----	----	.02	.02	.20	.22	----	z.33
Cloe	----	----	.09	.40	----	----	.35	----	----	----	.17	----	----	----	.04	.50	.14	.12	----	----	----	.24	.25	----	----	----	----	.27	.05	.09	----	2.71
Creekside	----	----	.10	.15	----	----	.10	----	----	----	.05	----	----	----	----	.74	T	----	----	----	----	.13	.27	----	.07	----	----	----	----	.32	----	1.93
Cresson	----	----	.17	----	.02	----	.14	.02	----	----	.11	----	----	----	.04	.51	.15	----	----	----	----	.22	.28	----	T	----	.11	.90	----	.20	----	2.87
Eagles Mere	----	----	----	----	.32	----	.15	.41	----	----	----	----	----	.13	----	----	.80	----	----	----	----	----	.88	----	----	----	----	.68	.28	.17	----	3.82
Falls Creek	----	----	.55	----	----	.12	----	T	----	----	.06	----	----	----	----	.08	.70	T	----	----	----	.36	.50	----	T	----	----	T	.82	.11	----	3.30
Graters Ford	----	----	----	.03	.85	----	.03	----	.04	----	----	----	----	----	----	----	.38	----	----	----	----	----	.89	----	.43	----	----	.02	----	----	.01	2.68
Hadley	----	.05	.05	.45	----	.27	.03	----	----	----	.06	----	----	----	.25	.85	.07	.04	----	.02	----	.10	.84	----	----	----	----	.24	.02	.02	T	3.36
Harrisburg	----	----	T	.45	----	----	.21	.17	----	----	----	----	----	----	----	.03	.29	----	T	----	----	T	.83	T	.01	----	.01	.30	.09	.11	T	2.50
Ketner	----	.02	.12	.27	----	.05	.10	.04	----	----	----	----	----	.04	.20	1.83	.31	.02	.01	----	----	.59	.59	----	.05	T	.05	.09	.67	.05	.04	5.14
Kinsman	----	.04	.12	.32	T	.38	.06	----	----	----	----	----	----	----	.34	.18	.30	.09	T	T	----	.21	.75	----	----	----	----	.56	.39	T	----	3.74
Linesville	----	.11	.10	.25	----	.07	.10	----	----	----	----	----	----	----	.15	.07	.28	.13	----	.07	----	.17	.64	----	----	----	----	1.10	.25	.05	.12	3.66
Pennline	----	.09	.09	.27	----	.11	.07	----	----	----	----	----	----	----	.17	.16	.45	.14	----	.16	----	.15	1.05	----	----	----	----	.71	.03	.04	.17	3.86
Summit	----	.12	.17	.21	----	.10	----	----	----	----	----	----	----	.14	.10	.12	.55	----	----	.27	----	.26	1.00	----	----	----	----	.84	.04	----	.07	3.99
Transfer	----	.08	----	.37	----	.25	T	----	----	----	----	----	----	----	.29	.14	.16	.08	T	----	----	.25	.77	----	----	----	----	.31	----	----	T	2.70
Turnerville	----	.08	.08	.31	----	----	.09	----	----	----	----	----	----	----	.19	.08	.29	.07	----	.03	----	.20	.76	----	----	----	----	.68	.11	.02	.06	3.05
Union City	----	.23	.35	.02	.10	----	----	.02	----	----	----	----	----	.27	----	.17	.15	----	.03	.23	----	.53	.35	----	----	----	.75	.63	----	.12	----	3.95
Westford	----	.11	.14	.21	----	.06	.05	----	----	----	----	----	----	.08	.12	.10	.34	.18	T	.06	----	.16	.63	T	----	----	----	.33	.15	.04	.07	2.83
Williamsfield	----	.08	.18	.20	----	----	.05	----	----	----	----	----	----	----	.25	.18	.45	.07	----	.05	----	.20	.58	----	----	----	----	.28	.18	.05	----	2.80

Daily Precipitation for June, 1916

Station	Day of Month																													Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Carlisle			.65		T	T	1.56	.04	.65	.09	.04			.02	.47	1.14	.46	.23	.14		.31			T	.04		.07			.11	6.02
Cloe		.13	2.14				.31	.04	.23	.56	.19				.48	.36	.33	.07	.31		.55				.05						5.75
Creekside		.15	1.34				.28	.19	.42	.07					.75	.10	.38		1.00		.50				.10						5.28
Cresson		.28	1.13			.03	.83	.11	.63	.51	.15				.68	.82	1.22	.05	.87		.44			.64			.12				8.51
Eagles Mere		1.75	1.40					1.03		.23	.10	.38					1.67	.79			.41		.40							.12	8.28
Falls Creek		T	2.00				.80	.20	.10	.40	.80				.53	.65	.22	.33	.72		.50				.82						8.07
Graters Ford			.17					1.27	.04	.04						.95	.17			.02		.08			.37	.02				T	3.13
Hadley			1.10	.04			.50	.29		.62	.17					.30		.18	.32	.18	.05	.15			.10						4.00
Harrisburg			.60				.84	.01	.27		.29	.02	T		.94	.99	.26	.35	.18	.23					.06			T			5.04
Ketner			2.50	T	.06		.46	.29	.74	.47	.92				.43	.28	.18	.04	.82		.25			.17	.02					.23	7.86
Kinsman			1.02	T			.28	.31	T	.29	.43	T		T		.04		.93	.26	.05	.08	T			.34						4.03
Lingsville			.47				.90	.32		.15	.51				.22	.11		.80	.22	.15		.17			.15						4.17
Pennline			.44	.04			.45	.29	.01	.22	.41	.32			T	.11		.20	.06	.30	.05	.20			.23						3.33
Summit			.69				.27	.62		.15	1.08	.18			.05		.10	.25		.31	.08	.22		.05	.20						4.25
Transfer			2.09	.05			.40	.22		.19	.26	T			T	.20		.13	.45	.11	.12	.11			.29						4.62
Turnerville			.82	.04			.30	.30		.26	.28	.03			.10	.13		.80	.19	.20	.05	.09			.14						3.78
Union City			.82				.39	.43	.26	.18	.33		.08	.60		.12	.14	.32	.39		.28			.07	.08				.21		4.80
Westford			.69	.04			.30	.18	T	.24	.49	.04			.29	.08		1.05	.16	.20	.04				.28						4.08
Williamsfield			.60	.11			.27	.22		.20	.38	.05				.10		.27	.15	.20	.08	.08									2.71

Daily Precipitation for July, 1916

Station	Day of Month																													Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Carlisle	----	T	----	----	T	----	----	----	----	.05	T	----	.68	----	T	.35	T	----	T	----	1.30	.53	.01	.35	3.25	.02	.40	T	----	----	.76	7.70
Cloe	----	----	----	----	----	----	----	----	.33	----	----	----	.80	.52	----	.11	.04	----	----	----	----	.40	----	----	----	----	----	----	----	----	.09	2.29
Creekside	----	----	.22	----	----	----	----	----	----	----	----	----	1.50	----	----	.10	----	----	----	----	----	.92	----	----	----	----	----	----	----	----	----	2.74
Cresson	----	.25	----	----	----	----	----	----	.33	----	----	----	.70	.01	----	.11	.44	.19	----	----	.13	.20	----	----	.96	.08	----	----	----	----	----	3.40
Eagles Mere	----	----	----	----	----	----	----	----	----	1.10	----	----	----	.21	----	----	----	----	.41	----	----	.23	----	----	*2.51	----	----	----	----	----	----	4.46
Falls Creek	----	----	.20	----	----	----	----	----	T	----	----	----	1.20	1.60	----	T	----	----	----	----	----	1.40	----	----	T	----	----	----	----	----	----	4.40
Graters Ford	----	----	.20	----	----	----	----	----	----	.52	----	----	----	2.64	----	----	----	----	----	----	.27	.15	.25	----	----	3.53	.02	.02	----	----	----	7.60
Hadley	----	----	.50	----	----	----	----	----	----	.51	----	----	.43	.15	----	.10	.53	----	.41	----	.04	----	----	----	----	----	----	----	----	----	----	2.67
Harrisburg	----	T	----	----	----	----	----	----	----	.76	.30	----	.28	.01	----	.09	.16	----	----	----	----	1.74	----	.07	1.45	.36	T	T	----	----	----	5.22
Ketner	----	.45	----	.01	----	----	----	----	----	.07	----	T	1.14	.23	----	T	.20	----	----	----	.31	.13	----	----	----	----	----	----	----	----	.01	2.55
Kinsman	----	----	.45	----	----	----	----	----	----	----	----	----	.52	T	----	T	.28	----	----	T	.07	----	----	----	----	----	----	----	----	----	----	1.32
Linesville	----	----	.35	----	----	----	----	----	----	1.20	----	----	----	.35	.10	----	.22	----	.08	----	----	----	----	----	----	----	----	----	----	----	----	2.30
Pennline	----	----	.37	----	----	----	----	----	----	----	----	----	----	.09	----	----	.04	----	----	----	T	----	----	----	----	----	----	----	----	----	----	0.50
Summit	----	----	1.05	----	----	----	----	----	----	.40	----	----	----	.25	.06	----	.05	----	----	----	----	.03	----	----	----	.02	----	----	----	----	----	1.86
Transfer	----	----	.79	----	----	----	----	----	----	----	----	----	----	.09	----	.38	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	1.26
Turnerville	----	----	.48	----	----	----	----	----	----	----	----	----	.27	.04	----	.03	.17	----	.18	.11	.02	----	----	----	----	----	----	----	----	----	----	1.30
Union City	----	----	.90	----	----	----	----	----	.07	----	----	----	.30	.07	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	.04	1.38
Westford	----	----	.24	----	----	----	----	----	----	----	----	----	.40	.05	----	----	.12	----	.21	.23	----	----	----	----	----	----	----	----	----	----	----	1.25
Williamsfield	----	----	.42	----	----	----	----	----	----	----	----	----	.08	.15	----	----	.13	.18	----	.27	----	----	----	----	----	----	----	----	----	----	----	1.23

*Total for 2 days.

Daily Precipitation for August, 1916

Station	Day of Month																													Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Carlisle	T			.15	.02			.09			.16		T			.04							.30			.43	.12	.70				2.01
Cloe					.30		.06	.53	.08		1.85					.20							.43			.02	.60	.74				4.61
Creekside	.31			1.07	1.20			.10	.07		.36	.33				.20							.83			.30	.10	.60				5.47
Cresson	.23			.18	.05			.05			1.00															.42	.03	.75				2.91
Eagles Mere								.25															.40					.90				1.55
Falls Creek								.50			1.07											1.10						.60				3.27
Graters Ford	.06								.09			.82					.07					.62		.14		T	.04	.02				1.86
Hadley					.50	.05		.20	.62		.11					.05							1.73			.20	.15					3.61
Harrisburg	.17			.39				.48				.07				T							.62			1.07	.38					3.18
Ketner				.13	T			.05	T		.53		.02			.01						T	.10			T	.36					1.20
Kinsman	T				.28	.04		.16	.50			T	T			T			T				.35		.10	.35	.10					1.43
Linesville								.16	.41														.39			.71						1.73
Pennline	T			.02				.75	.07			.01	.05										.33			.22	.03					1.54
Summit	.05			.08		.11		.42	.75				.28										.20	T		.19	.10					2.31
Transfer					.19	.41		.34	.60														1.24			.32	.13					2.19
Turnerville					.81	.28		.17	.44			.09	.01			.02							.02			.28	.07					3.41
Union City				.10	.49			.52	T				.15									.05	.94			.23						1.56
Westford					.05			.19	.42			T	.01			T							.58			.60	.05					2.26
Williamsfield					.05			.13	.38							.05										.25	.05					1.49

Daily Precipitation for September, 1916

Station	Day of Month																													Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Carlisle	.02							T						T	1.22	T		.05				.80							.68		2.77
Cloe		.81			.30		.19	.20						.41	.27							.55	.09						.53		3.35
Creekside		.23			.70		.95							.30	.20							.68							.35		3.41
Cresson	.03	.23			T	.72	.09		.16						.56							.35	.01		.03			1.78		3.96
Eagles Mere	.13														1.65							.06	1.06						1.77	4.67
Falls Creek	.70			2.00			T							.20	.85						.31	.04		.10			T	.50		4.70
Graters Ford								.14							1.98				.20				.03					1.22		3.57
Hadley		.25			.15	.30		.65	.20					.02	.18			.02					.18			.22		.30		2.47
Harrisburg	T	T						.23							4.69								.76		T			.58		6.96
Ketner	.74	.23			.59		.10	.65						.30	.19			.02			.01	.10				T		.65	.02	3.61
Kinsman		.85				.50		.65	.24						.53			.07				.12					.04	.66	.04	3.70
Linesville		.20			1.10			.87	.17						.46							.12	.21				.21	.61		3.95
Pennline		.18			1.84		.02	1.18	.11						.26	.01		.07				.04	.21	.20			.18	.01	.51	.07	4.99
Summit		.15			1.45		.05	1.16	.11						.30	.03						.13	.32	.32			.15	.05	1.10	.05	5.37
Transfer		.44						1.31	.49						.23			T				.05	.17	T			T		.52		3.21
Turnerville		.31			.25	.04		.71	.19						.90			.09				.07	.07				.12	.01	.53	.02	3.31
Westford					.90			.64	.15						.39	.01		.06				.07	.11	T			.12		.62		3.07
Williamsfield					.65			.84	.13						.18			.05					.15				.10		.35	.12	2.57

Daily Precipitation for October, 1916

Station	Day of Month																													Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Carlisle									.10				.23		.02	T	.33		1.65	.07											.15	2.55
Cloe									.12				.56			.14	.13		1.17	.48												2.60
Creekside													.38			.10			.80	.20												1.48
Cresson									.30				.36			.06	.28		1.51	.44					.03						.14	3.12
Eagles Mere													.61			.27			.72	1.09												2.69
Falls Creek									.05				.81				.04		.93	.20							T				T	2.03
Graters Ford													.22			.01			.78											.75		1.76
Hadley								.20	.05				.35	.50					.90	.48	.20					.09		.03				2.80
Harrisburg									.04				.27			.06	.30		1.43		.02											2.12
Karthaus									.10				.50							.60												1.20
Ketner									.19	T			.75	T		.01	.12		.85	.63						.05					.12	2.76
Kinsman									.14	.04			.41	.29		.03			1.02	.29	.11										.06	2.39
Linesville									.61				.51	.12					1.10	.15	.03											2.55
Pennline									.44				.49	.36			.18		.82	.22	.26					.07						2.84
Summit									.55	.05			.60	.41			.25		1.05	.15	.30					.09						3.45
Transfer									.16	T			.55	.36		.04			.96	.15	.17					.09						2.48
Turnerville									.27				.50	.43		.03	.11		.93	.11	.15					.09						2.62
Westford									.42	.05			.45	.25			.12		.98	.05	.15	T					T					2.47
Williamsfield									.58				.43	.30			.08		.95	.20												2.54

Daily Precipitation for November, 1916

Station	Day of Month																													Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Carlisle				.18					.01					.02	.01								.70					T	.38		1.30
Cloe	.37			.37					.09	.22				.20			.04						.54	.27				.41	.38		2.89
Coatesville		T		.21						.05		.08			T								.50	.17					.14	.64	1.79
Creekside				.28						.34				.20									.40	.10				.40	.50		2.22
Cresson				.18					.32					.04	.05								.25	.35				.03	.12	.24	1.58
Eagles Mere	.20													.18		.10							1.06						1.03		2.57
Falls Creek	.40				.20																			.80					.50	.20	2.10
Graters Ford	.01			.02						T		.03											.82							.73	1.61
Hadley	.25				.10					.56				.60	T	.01	.02							.80	.50				.25	.05	3.14
Harrisburg	.18			.17		T				.02			T	.01	T								.45	.35						.75	1.93
Karthaus														.40									.35	.30				.15	.20	.15	1.55
Ketner	.16			.16					.20	.24				.35	.05	.02	.04	T					.34	.23	.17	.02		.18	.30	.05	2.51
Kinsman					.30					.59				.48	.06	.04	.05							.77	.50	.02			.17		2.98
Linesville	.05				.07					.32				.41	.02		.05							.56	.50	.02	.01		.24	.25	2.50
Pennline	.05				.05					.31	.04			.53	.06	.05	.03	.02						.65	.35	.25			.17	.14	2.70
Summit	.28				.04					.45	.05			.62	.09	.09	.03	T					.08	.50	.50	.50			.12	.13	3.48
Transfer	.38			T	.17					.45				.12	.42	T	T	T						.80	T	T			.28	.05	2.67
Turnerville	.20				.12					.42	.03			.43	.01	.02	.05						.03	.63	.45	.25			.21	.12	2.97
Westford	.22				.12					.40				.59	.10	.03	.05							.58	.50	.03			.22	.18	3.02
Williamsfield					.15					.34				.34		.03	.04							.68	.40				.23	.13	2.34

Daily Precipitation for December, 1916

Station	Day of Month																													Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Carlisle									.27		T	.26	.04		.15			.08				.74		T			.53	.36				2.43
Clos			.06		.03				.10				.03		.17		.11	.02		.13	.03	.39					.62					1.69
Coatesville				.03	.05				.35		.20	.60			.29			.13	.08		.41	1.15					.25	.37				3.91
Creekside									.25						.17		.10			.10		.40					.66	.20				1.88
Cresson					.08				.34			.19	.11		T		.15	.01				.42					.83	.25		.04		2.42
Eagles Mere					.12	.20						.22			.27			.90				1.01					.45					3.17
Falls Creek												.08	.13	.18	.12	T	.12	T	.04	.10	.06	.47	.08	T	T	.10	.37	.26	T	T	T	2.13
Graters Ford				.03	.05				.41			*.77		.08		*.27			.13		.05	2.13						*1.00				4.92
Hadley				.10	.10			.05	.40	.05		.04	.18	.13	.33		.12		.13	.16	.12	.60	.12				.65	.10				3.38
Harrisburg				.04	.03				.29			.33	.03		.11				.07		.10	.73					.30	.62				2.65
Karthaus												.15				.20				.25							.50	.35				1.45
Ketner			T	.07	.08				.34			.13	.07	.02	.04	.02	.12	T	.01	.07	.08	.60					.61					2.26
Kinsman				.06	.32				.28			.05	.15	.25	.13	.16		.09	.08	.16	.23	.69	.06				.29	.04	T			3.04
Linesville					.35			.03			T	.10	.23	.29	.20	.33	.12	.05	.16	.24	.35	.65	.18		.10		.44			.10	.01	3.98
Pennline				.09	.21			.03	.29			.04	.60	.50		.33	.18	.06	.20	.16	.27	.71	.08		.03		.44	.04	T	.10	.10	4.46
Summit				.04	.21			.03	.40			.06	.70	.95	.15	.50	.18	.09	.24	.16	.32	.78					.46		T	.10		5.37
Transfer				.06	.26				.36			.02		.12		.08	.10		.10	T	.17	.78	.03		T		.55	.03		T	T	2.63
Turnerville				.05	.35				.35	.07		.08	.15	.21	.09	.17	.15	.01	.12	.12	.27	.78	.12	.08			.43	.03			.01	3.64
Westford				.04	.28			.01	.40	.07		.06	.15	.25	.13	.33	.15	T	.08	.24	.27	.65	.06				.39	T		T	.05	3.61
Williamsfield				.05	.20				.24			.05	.15	.16	.16	T	.25			.16	.28	.78					.48					2.96

*Total for 2 days.

Monthly and Annual Precipitation for the Year 1916

Station	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Annual
Carlisle	1.94	3.26	4.95	2.95	2.38	6.02	7.70	2.01	2.77	2.55	1.30	2.42	40.21
Cloe	3.77	2.78	4.03	2.83	2.71	5.75	2.29	4.61	3.35	2.60	2.89	1.69	39.30
Coatesville											1.79	3.91	
Creekside	3.22	2.54	3.88	2.40	1.93	5.28	2.74	5.47	3.41	1.48	2.22	1.88	36.45
Cresson	3.19	3.14	5.58	4.33	2.87	8.51	3.40	2.91	3.96	3.12	1.58	2.42	45.01
Eagles Mere	2.61	3.87	7.09	5.25	3.82	8.28	4.46	1.55	4.67	2.69	2.57	3.17	50.03
Falls Creek	2.40	3.08	4.38	2.84	3.30	8.07	4.40	3.27	4.70	2.03	2.10	2.13	42.70
Graters Ford	1.41	3.50	3.47	2.77	2.68	3.13	7.60	1.86	3.57	1.76	1.61	4.92	38.28
Hadley	2.84	1.64	3.87	3.55	3.36	4.00	2.67	3.61	2.47	2.80	3.14	3.38	37.33
Harrisburg	1.93	3.36	4.68	2.99	2.50	5.04	5.22	3.18	6.26	2.12	1.93	2.65	41.86
Karthaus										1.20	1.55	1.45	
Ketner	2.95	2.62	4.04	4.70	5.14	7.86	2.55	1.20	3.61	2.76	2.51	2.26	42.20
Kinsman	2.69	1.58	3.73	3.38	3.74	4.03	1.32	1.43	3.70	2.39	2.98	3.04	34.01
Linesville	2.58	2.78	3.81	3.42	3.66	4.17	2.30	1.73	3.95	2.55	2.50	3.93	37.38
Pennline	2.94	2.37	3.76	3.46	3.86	3.33	0.50	1.54	4.89	2.84	2.70	4.46	36.65
Summit	3.16	2.73	3.84	3.63	3.99	4.25	1.86	2.31	5.37	3.45	3.48	5.37	43.44
Transfer	2.83	1.58	3.97	2.86	2.70	4.62	1.26	2.19	3.21	2.48	2.67	2.66	33.03
Turnerville	2.61	1.75	3.46	3.26	3.05	3.73	1.30	3.41	3.31	2.62	2.97	3.64	35.11
Union City	2.80	2.59	2.16	5.05	3.95	4.80	1.38	1.56					
Westford	2.59	1.81	3.49	3.22	2.83	4.08	1.35	2.26	3.07	2.47	3.02	3.61	35.70
Williamsfield	2.66	1.70	3.48	3.30	2.80	2.71	1.23	1.49	2.57	2.54	2.34	2.96	29.78

CHAPTER V

HYDROGRAPHY

STREAM FLOW CONDITIONS DURING THE YEAR

During the water year from October 1, 1915, to September 30, 1916, the run-off of Pennsylvania streams was above the average, this being due in large measure to the floods which occurred in June, described in the previous chapter. The average run-off of the streams in all parts of the State during October, November, December and January was above the normal, while in February and March it was below. During the following four months the run-off was in excess of the average, especially in the Susquehanna Basin, over which the rainfall was unusually high during June. In August and September the streams throughout the State yielded only 35 to 60 per cent of their normal flow.

A summary of the run-off, in cubic-feet per second per square mile, of the streams on which gaging stations are maintained by the Commission, is contained in Tables Nos. 10, 11 and 12 in the Appendix of this report.

NEW STREAM GAGING STATIONS

New stream gaging stations were established on the Little Schuylkill River at Tamaqua; Nescopeck Creek above St. Johns; Codorus Creek at York; and Mahoning Creek near Dayton. During the past year reports were received from 105 gaging stations, with 19 in the Delaware, 43 in the Susquehanna, and 43 in the Ohio Basin.

ABANDONED STREAM GAGING STATIONS

On account of unsatisfactory conditions prevailing at eight gaging stations, the Commission has abandoned those on Rattlesnake Brook at Spring Brook; Darby Creek at Lansdowne; Schuylkill River at Conshohocken; Wyalusing Creek at Wyalusing; Buffalo Creek near Lewisburg; Kishacoquillas Creek at Kulps; Kinzua Creek at Dewdrop; and Sugar Creek at Wyattville.

INSPECTION TRIPS AND NEW DISCHARGE CURVES

Each gaging station was visited during the year and 293 discharge measurements made, 52 in the Delaware Basin, 119 in the Susquehanna Basin, and 122 in the Ohio Basin. As a result of additional current meter measurements, new discharge curves were constructed for Schuylkill River at Schuylkill Haven; North Branch Susquehanna River at Wilkes-Barre; Clearfield Creek at Dimeling; Bald Eagle Creek at Beech Creek; West Branch Susquehanna River at Williamsport; Juniata River at Newport; and Susquehanna River at Harrisburg.

ELEVATIONS

In order that all gages might be referred to the same datum, a series of levels were run connecting the zeros of gages with tidal bench marks of the U. S. Geological Survey, railroad companies and municipalities. The results of this work will be checked in the field before they are published.

EXPLANATION OF TABLES OF ESTIMATED MONTHLY DISCHARGES

In the tables of estimated monthly discharges in the Hydrographic Data Appendix, the column headed "Maximum" gives the mean flow for the day when the mean gage height was the highest, except during floods and sharply defined crests, when the "Maximum" indicates the highest rate of flow. This rate is obtained by using the highest observed gage height or the crest shown by a hydrograph, the duration of the crests usually representing a small fraction of a day. In the column headed "Minimum" the quantity given is the mean flow for the day when the mean gage height was the lowest. The column headed "Mean" is the average flow in cubic feet for each second during the month. The computations for run-off in second-feet per square mile and depth in inches are based on the value of the "Mean." The "Mean" for the year is obtained by dividing the total discharge by the number of days in the year, and the run-off in second-feet per square mile for the year is based on this figure.

DISCHARGE OR RATING TABLES

Discharge tables at rated gaging stations, showing gage heights with corresponding discharges, although published in former years, have been omitted in this report. These tables are made up from discharge curves and are only used as a means toward obtaining discharges from known gage heights.

DESCRIPTIONS OF BASINS

The descriptions of basins formerly published in the Hydrographic Data Appendix of the annual reports of this Commission may be found in the Water Resources Inventory Report, Part III, entitled "Gazetteer of Streams," which contains detailed descriptions of streams having a drainage area of 25 square miles or more.

APPENDIX

HYDROGRAPHIC DATA

FOR

1915-16

APPENDIX

HYDROGRAPHIC DATA

FOR

1915-16

CHANGE OF YEAR

Previous to 1914 it was the custom for computations of stream flow to extend from January to December, inclusive; it has been decided, however, to change the ending of the stream gaging year from December 31 to September 30, because:

1. In Pennsylvania the draft period usually ends and the storage period begins about the end of September, as shown in a representative manner by the flow for a long period of years of the Susquehanna River at Harrisburg, where the drainage area is 24,100 square miles, a section equal to 53 per cent of the total area of the State.

2. By completing the computations before the end of the calendar year the annual reports can be published and distributed earlier.

3. The annual computations of the records can be completed in December, which will give opportunity for securing a large number of measurements of stream flow under ice cover. These measurements will furnish exceptionally valuable information since the flow of the streams during frozen periods is an uncertain quantity, requiring approximations of the probable discharge from climatological records and from the flow of streams having similar physical characteristics.

4. The semiannual gage inspection trips can be made during periods when discharge measurements can always be made and when levels can be run to ascertain the slope of the water surface at each gaging station in order to secure further data for the determination of the coefficient of roughness. A knowledge of this coefficient is essential in calculations necessary for action on applications for the construction of bridges and other encroachments as well as being of importance in other engineering studies.

5. It is in accord with the practice of the U. S. Geological Survey and it is desirable that there should be conformity in the methods pursued by the two organizations.

EXPLANATION OF TERMS USED IN APPENDIX

The volume of water flowing in a stream is expressed in various terms which may be divided into two groups:

(1) Those which represent a rate of flow as, second-feet, gallons per minute, and run-off in second-feet per square mile; and (2) those which represent the actual quantity of water as, run-off in depth in inches. The units used in this series of reports are second-feet, second-feet per square mile and run-off in inches.

"Second-feet" is an abbreviation for cubic foot per second and is the unit for the rate of discharge of water in a stream 1 foot wide, 1 foot deep, flowing 1 foot per second. It is generally used as a fundamental unit from which others are computed by the use of factors given in the table of equivalents below.

"Second-feet per square mile" is the average number of cubic feet of water flowing from each square mile of area drained, on the assumption that the run-off is distributed uniformly in time and area.

"Run-off in inches" is the depth to which the drainage area would be covered if all the water flowing from it in a given period were conserved and uniformly distributed on the surface. It is used for comparing run-off with rainfall, which is usually expressed in depth in inches.

"Gage height" is a term used to indicate the fluctuating stages of a stream at a particular point, with reference to an established datum which does not change. Gage height has no reference to the depth of water but is merely the elevation of the water surface above a fixed point, while the zero of gage heights is generally below the minimum stage. For example, at Wilkes-Barre, on the North Branch Susquehanna River, when the gage height is 4.35 feet the maximum depth of water in the river at that point is 18.5 feet. Where elevations are given it is understood they refer in feet to mean sea level, unless otherwise specified.

CONVENIENT EQUIVALENTS

The following is a list of convenient equivalents for use in hydraulic computations:

1 second-foot equals 7.48 U. S. gallons per second; equals 448.8 gallons per minute; equals 646,272 gallons for one day.

1 second-foot equals 6.23 British Imperial gallons per second.

1 second-foot for one year covers 1 square mile 1.131 feet or 13.57 inches deep.

1 second-foot for one year equals 31,536,000 cubic feet.

1 second-foot for one day covers 1 square mile 0.03719 inch deep.

1 second-foot for one 28 day month covers 1 square mile 1.041 inches deep.

1 second-foot for one 29 day month covers 1 square mile 1.079 inches deep.

1 second-foot for one 30 day month covers 1 square mile 1.116 inches deep.

1 second-foot for one 31 day month covers 1 square mile 1.153 inches deep.

1 foot per second equals 0.68 mile per hour.

100 United States gallons per minute equals 0.223 second-foot.

1,000,000 United States gallons per day equals 1.55 second-feet.

1 inch deep on 1 square mile equals 2,323,200 cubic feet.

1 mile-foot is 12 inches depth on one square mile and equals 27,878,400 cubic feet.

1 cubic foot equals 7.48 gallons.

1 cubic foot of water weighs 62.5 pounds.

1 horse-power equals 550 foot-pounds per second.

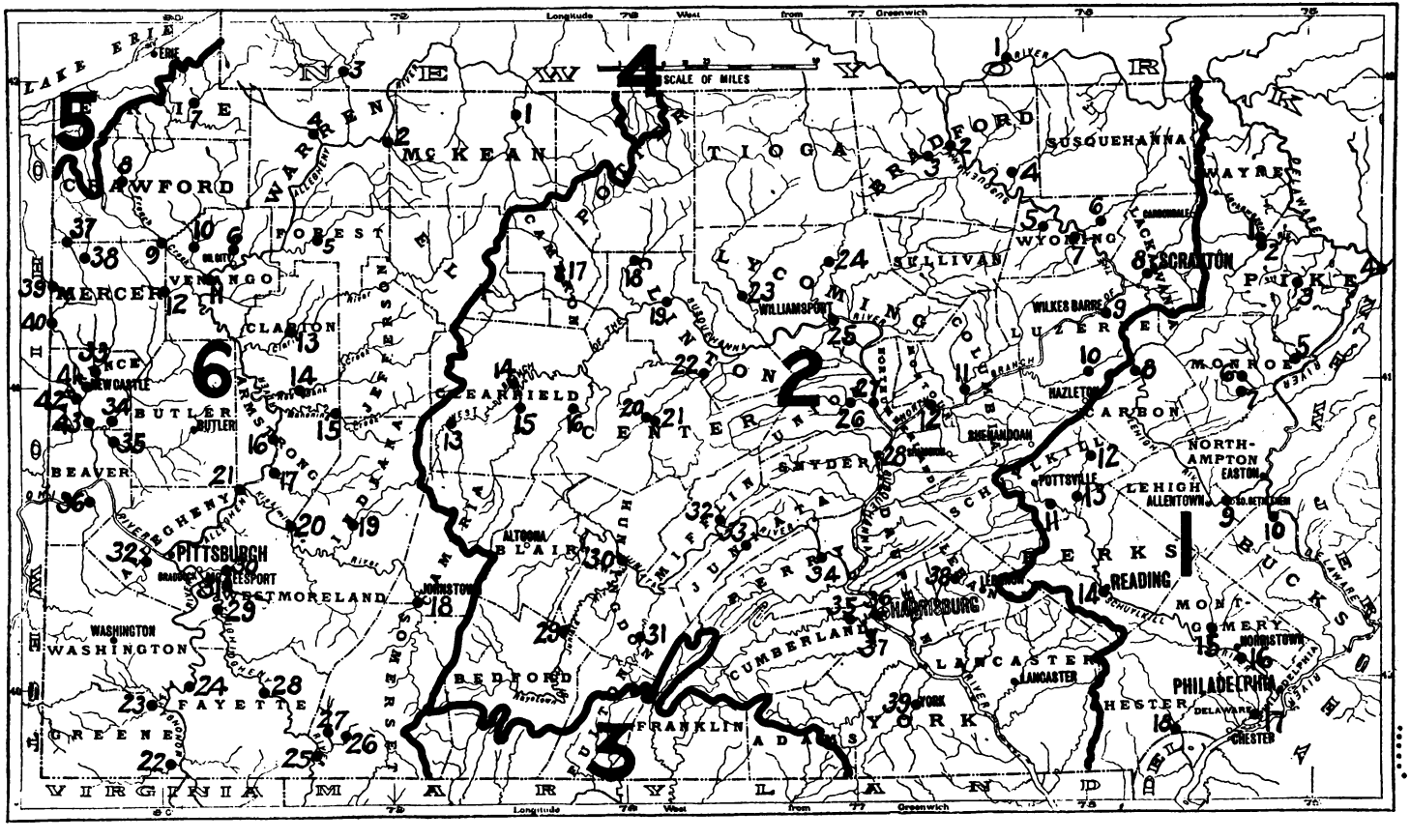
1 horse-power equals 746 watts; 1 kilowatt equals 1.34056 H. P.

1 horse-power equals 1 second-foot falling 8.80 feet, 100 per cent efficiency.

To calculate water power quickly $\frac{\text{Sec.-ft.} \times \text{fall in feet}}{11}$ net horse-power on shaft of water wheel realizing 80 per cent of theoretical power.

WATER SUPPLY COMMISSION OF PENNSYLVANIA

MAP SHOWING LOCATION OF GAGING STATIONS—1915-1916



Legend,—Drainage Basins—(1) Delaware, (2) Susquehanna, (3) Potomac, (4) Genesee, (5) Erie, (6) Ohio.

DELAWARE BASIN

LACKAWAXEN RIVER AT HAWLEY

DESCRIPTION OF STATION

Location—At single span, steel, through truss, highway bridge about 2,000 feet above the mouth of Wallenpaupack Creek at Hawley, Wayne County.

Records Available—Discharge complete from July 2, 1908, to July 31, 1913, and from October 1, 1913, to September 30, 1916. For other records on this river see Lackawaxen River at Rowlands in the 1914 and 1915 reports of the Water Supply Commission.

Drainage Area—290 square miles.

Gage—A standard chain gage, whose elevation of zero is arbitrary, is located on the upstream side of the bridge and is read twice daily by J. S. Pennell.

Channel—The right bank overflows in extreme stages, the left bank is high and does not overflow, and the bed is composed of gravel and rock.

Remarks—Intermittent storage upstream at Honesdale affects the flow during low stages.

Discharge Measurement of Lackawaxen River at Hawley, Wayne County

(Drainage area, 290 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
18	July 11	Brown & Heagy	304	2.57	394	0.6 method

Daily Mean Gage Heights, in feet, of Lackawaxen River at Hawley, Wayne County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	1.8	0.82	1.4	2.9	4.1	3.1	9.0	3.5	2.8	1.9	2.3	0.39
2	2.1	0.83	1.4	3.4	3.7	2.8	9.2	3.1	2.4	1.7	2.0	0.63
3	2.8	0.83	1.3	3.6	3.3	*	7.7	2.8	2.3	1.7	1.7	0.14
4	2.4	0.76	1.2	3.6	2.6	-------	6.2	2.6	3.6	1.7	1.5	0.20
5	2.2	0.86	0.99	3.4	2.7	-------	5.4	2.6	††3.1	1.5	1.4	0.45
6	2.1	0.86	1.1	5.1	2.7	-------	5.1	2.4	2.5	1.4	1.3	0.33
7	2.0	‖0.82	1.1	4.3	2.5	-------	4.8	2.2	2.4	1.3	1.3	0.28
8	1.7	0.79	1.2	3.5	2.2	-------	4.3	3.1	3.8	1.2	1.2	0.34
9	1.6	0.84	1.1	3.0	2.3	-------	4.0	2.4	3.6	1.2	1.5	0.28
10	1.6	0.85	*	2.9	2.2	-------	3.8	2.1	3.4	2.3	1.3	—0.01
11	1.4	0.83	-------	2.8	2.3	-------	3.9	1.9	3.3	2.5	1.2	0.19
12	1.4	0.82	-------	2.6	2.3	-------	4.3	1.6	3.3	2.4	1.2	0.23
13	1.4	0.73	-------	2.8	1.4	-------	4.6	1.4	2.8	2.6	1.0	0.20
14	1.3	0.73	-------	3.1	*	-------	8.1	1.5	2.6	3.1	1.0	0.24
15	1.3	0.98	-------	*	-------	-------	6.6	1.6	2.3	2.2	0.99	1.4
16	1.2	1.4	-------	-------	-------	-------	5.8	1.9	2.9	1.8	0.79	1.4
17	1.1	1.2	-------	-------	-------	-------	4.4	2.4	4.3	1.6	0.78	1.2
18	1.1	1.0	-------	-------	-------	-------	3.9	2.7	3.5	1.6	0.81	0.79
19	1.1	1.5	3.8	-------	-------	-------	3.4	2.4	3.4	1.5	0.69	0.61
20	1.1	2.7	3.4	-------	-------	-------	3.1	2.2	3.7	1.2	-------	0.49
21	1.1	2.9	3.0	-------	-------	-------	3.0	2.0	3.0	1.1	-------	0.51
22	1.1	2.6	2.7	-------	-------	-------	3.8	3.5	2.9	1.0	-------	0.51
23	0.92	2.3	2.5	4.6	-------	-------	4.1	4.0	2.6	1.5	-------	0.49
24	0.83	2.3	2.3	3.9	-------	-------	3.9	3.3	2.3	1.2	-------	0.14
25	0.91	1.8	2.2	3.4	-------	-------	3.6	2.8	2.3	1.1	-------	0.31
26	0.86	1.8	4.1	3.4	4.6	-------	3.5	2.4	2.3	0.4	0.57	0.33
27	0.93	1.6	3 8	4.2	4.1	-------	4.2	2.1	2.0	5.8	0.54	0.34
28	1.1	1.6	3.7	4.6	4.0	-------	5.3	2.2	4.1	4.9	0.49	0.31
29	0.97	1.6	3.5	3.9	3.5	-------	4.4	3.6	2.7	3.8	0.80	0.34
30	0.93	1.5	3.2	3.4	-------	5.1	3.8	3.6	2.2	3.0	0.78	0.57
31	0.89	-------	2.8	3.4	-------	8.4	-------	3.4	-------	2.7	0.40	-------

NOTES—*River frozen December 10 to 18, 1915; January 15 to 22; February 14 to 25, and March 3 to 29, 1916, inclusive. ‖Interpolated. ††Estimated.

Daily Discharge, in Second-feet, of Lackawaxen River at Hawley, Wayne County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	182	103	202	638	1,200	720	4,390	902	598	314	423	53
2	368	104	202	854	998	598	4,530	720	458	263	340	78
3	596	104	182	950	808	*360	3,460	598	426	263	263	34
4	458	94	162	950	524	320	2,420	524	950	263	222	38
5	396	108	127	854	560	310	1,920	524	720	222	202	59
6	368	108	144	1,750	580	290	1,750	458	490	202	182	48
7	340	103	144	1,300	490	290	1,580	396	458	182	182	44
8	263	97	162	902	396	290	1,300	720	1,050	162	162	49
9	244	106	144	678	426	265	1,150	458	950	162	222	44
10	244	107	*150	638	396	245	1,050	363	854	426	182	25
11	202	104	140	598	426	230	1,100	314	808	490	162	37
12	202	103	130	524	426	215	1,300	244	808	458	162	40
13	202	90	115	598	202	200	1,460	202	598	524	128	38
14	182	90	105	720	*240	190	3,750	222	524	720	128	41
15	182	125	95	*510	230	180	2,680	244	426	396	127	202
16	162	202	85	360	220	175	2,160	314	638	290	99	202
17	144	162	120	320	210	160	1,360	458	1,300	244	97	162
18	144	128	600	290	210	160	1,100	560	902	244	101	99
19	144	222	1,050	290	205	160	854	458	854	222	85	75
20	144	560	854	350	200	160	720	396	998	162	††85	63
21	144	638	678	380	190	145	678	340	678	144	††82	65
22	144	524	560	700	190	130	1,050	902	638	128	††80	65
23	117	426	490	1,460	180	125	1,200	1,150	524	222	††78	63
24	104	426	423	1,100	195	120	1,100	808	396	162	††75	34
25	115	290	396	854	450	115	950	598	426	144	††73	47
26	108	290	1,200	854	1,460	130	902	458	426	2,550	71	48
27	118	244	1,050	1,250	1,200	180	1,250	368	340	2,160	68	49
28	144	244	998	1,460	1,150	425	1,860	396	1,200	1,630	63	47
29	124	244	902	1,100	902	1,000	1,360	950	560	1,050	100	49
30	118	222	764	854	-------	1,750	1,050	950	396	678	97	71
31	113	-------	568	854	-------	3,960	-------	854	-------	560	54	-------

NOTES—*River frozen December 10 to 18, 1915; January 15 to 22; February 14 to 25, and March 3 to 29, 1916, inclusive, and discharge estimated from climatological data. Discharges above 2,963 second-feet are estimated. ††Estimated.

Estimated Monthly Discharge of Lackawaxen River at Hawley, Wayne County

(Drainage area, 290 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	596	104	210	0.72	0.83
November	638	90	212	0.73	0.81
December	1,200	----------	419	1.44	1.63
1916					
January	1,750	----------	805	2.78	3.20
February	1,460	----------	512	1.77	1.91
March	††3,960	----------	439	1.51	1.74
April	††4,530	678	1,710	5.90	6.58
May	1,150	202	544	1.88	2.17
June	1,800	340	680	2.34	2.61
July	2,560	128	505	1.74	2.01
August	426	54	142	0.49	0.56
September	202	25	68	0.23	0.26
The year	††4,530	25	519	1.79	24.34

NOTES—River frozen December 10 to 18, 1915; January 15 to 22; February 14 to 25, and March 3 to 29, 1916, inclusive, and discharge estimated from climatological data. ††Estimated.

DELAWARE BASIN—STATION NO. 2

WALLENPAUPACK CREEK AT WILSONVILLE

DESCRIPTION OF STATION

Location—At two span, steel, highway bridge at Wilsonville, 1½ miles above the mouth at Hawley, Wayne County.

Records Available—Discharge measurements 1908 to 1916, inclusive; gage heights 1909 to 1913, and daily and monthly discharges from January 1, 1910, to September 30, 1916, inclusive, except for intermittent periods.

Drainage Area—239 square miles.

Gage—A vertical staff gage, whose elevation of zero is 1,146.78 feet above mean sea level, is located on the downstream face of the pier. A Barrett and Lawrence automatic gage, referred to same datum as the staff gage, is located on the top of the pier, and supplements the readings taken from the staff gage. Both gages are read by an employe of L. B. Stillwell, Consulting Engineers, New York City.

Channel—The right bank overflows at extreme stages, the left bank is high and does not overflow, and the bed is composed of solid rock.

Remarks—There is a low log weir located approximately 70 feet downstream from the gage. Thirty-five feet above the gage is a 3 foot concrete dam, upon which flashboards are placed during periods of low flow in order to provide storage for the operation of the silk mills below.

The following record has been compiled and computed from data furnished by L. B. Stillwell, Consulting Engineers, New York City, who have made a comprehensive study of this stream.

Discharge Measurements of Wallenpaupack Creek at Wilsonville, Wayne County

(Drainage area, 239 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1915		Sq. ft.	Feet	Sec.-ft.	
20	Nov. 30	La Bar,	214	1.20	266	
	1916					
21	July 11	Brown & Heagy,	315	1.96	699	0.6 method

Daily Discharge, in Second-feet, of Wallenpaupack Creek at Wilsonville, Wayne County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	194	140	271	700	790	880	3,800	1,243	949	402	804	104
2	232	138	271	700	790	700	4,000	1,050	694	373	576	88
3	418	136	219	700	790	620	3,800	892	479	330	390	*39
4	428	130	219	970	700	540	2,615	772	511	339	294	*31
5	342	114	219	925	540	464	1,945	727	544	300	249	94
6	330	128	219	970	540	428	1,710	698	424	252	236	*72
7	324	126	219	970	540	428	1,480	584	342	227	217	*54
8	300	122	219	880	464	428	1,275	524	492	199	196	*54
9	271	124	172	835	392	428	1,170	556	702	189	194	*48
10	249	136	172	745	392	392	1,170	492	736	478	176	*58
11	232	140	172	745	392	360	1,070	453	688	875	158	*45
12	219	126	172	660	392	360	970	393	644	995	152	*48
13	209	118	172	580	464	330	1,380	318	608	844	138	*44
14	196	122	150	620	271	330	1,945	268	516	608	120	*38
15	185	115	150	660	271	330	2,615	250	425	446	111	*75
16	176	178	172	464	271	330	2,335	258	366	324	104	260
17	176	202	172	560	271	330	1,710	386	571	271	102	227
18	168	169	219	464	244	330	1,380	668	876	300	94	124
19	160	172	580	392	219	330	1,170	669	902	274	76	89
20	154	699	745	360	219	330	1,170	516	808	227	*29	95
21	174	921	745	330	219	330	880	376	694	201	*86	86
22	185	835	668	464	219	300	880	363	616	172	105	83
23	174	612	620	745	219	271	1,070	361	636	163	107	83
24	154	428	500	1,020	271	271	1,275	584	505	158	104	*22
25	144	356	540	970	580	300	1,170	576	406	144	104	*74
26	134	342	700	835	880	360	1,070	488	449	288	83	*66
27	138	312	790	880	1,480	464	1,170	421	420	1,770	*32	*49
28	148	309	790	970	1,480	620	1,275	372	435	2,468	*65	*58
29	148	273	880	970	970	790	1,590	699	548	1,822	86	*87
30	144	271	880	835	-------	1,380	1,275	1,075	453	1,357	96	109
31	140	-------	790	790	-------	2,200	-------	1,185	-------	1,035	109	-------

NOTE—*Leakage flow estimated.

Estimated Monthly Discharge of Wallenpaupack Creek at Wilsonville, Wayne County

(Drainage area, 239 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October,	428	134	214	0.90	1.04
November,	921	114	266	1.11	1.24
December,	880	150	413	1.73	1.99
1916					
January,	1,020	330	733	3.07	3.54
February,	1,480	219	527	2.21	2.38
March,	2,200	271	515	2.15	2.49
April,	4,000	380	1,679	7.02	7.85
May,	1,243	250	585	2.45	2.83
June,	949	342	581	2.43	2.72
July,	2,468	144	575	2.41	2.78
August,	804	*29	174	0.73	0.84
September,	260	*22	80	0.33	0.37
The year,	4,000	*22	527	2.21	30.07

NOTE—*Leakage flow estimated.

DELAWARE BASIN—STATION NO. 3

RATTLESNAKE BROOK AT SPRING BROOK

DESCRIPTION OF STATION

Location—At single span, open, wooden, highway bridge on Spring Brook Road, Pike County, two miles above the mouth.

Records Available—Discharge measurements and gage heights from September 22, 1911, to February 29, 1916.

Drainage Area—11 square miles.

Gage—A sectional staff gage, whose elevation of zero was arbitrary, was located on the left abutment and was read twice daily by August Tampier.

Channel—Both banks are high and not subject to overflow, and the bed is composed of gravel and mud.

Remarks—Station discontinued February 29, 1916.

Daily Mean Gage Heights, in feet, of Rattlesnake Brook at Spring Brook, Pike County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.
1	1.23	1.38	1.6	1.9	2.2
2	1.6	1.35	1.6	1.9	2.1
3	1.7	1.38	1.6	2.0	2.1
4	1.6	1.40	1.6	2.1	2.0
5	1.7	1.40	1.6	2.1	2.0
6	1.6	1.40	1.5	2.2	2.0
7	1.5	1.39	1.5	2.1	2.0
8	1.49	1.37	1.5	2.1	2.0
9	1.44	1.35	1.5	*2.1	2.0
10	1.42	1.41	1.5	2.0	2.0
11	1.40	1.40	1.5	2.0	2.0
12	1.39	1.38	*1.5	2.0	1.9
13	1.37	1.37	1.49	2.0	1.9
14	1.36	1.36	1.47	2.0	1.9
15	1.36	1.35	1.45	2.0	1.9
16	1.35	1.42	1.45	1.9	1.8
17	1.34	1.5	1.45	1.9	1.7
18	1.32	1.45	1.5	1.9	1.7
19	1.30	1.44	1.7	1.9	1.7
20	1.36	1.9	2.1	1.9	1.6
21	1.8	2.2	2.0	1.8	1.6
22	1.8	2.1	2.0	1.8	1.6
23	1.6	2.1	1.9	2.0	1.6
24	1.45	2.0	1.9	2.1	1.6
25	1.44	1.9	1.8	2.2	1.6
26	1.42	1.8	1.9	2.4	2.4
27	1.5	1.7	1.9	2.4	2.8
28	1.47	1.7	1.9	2.3	2.8
29	1.45	1.7	2.0	2.2	2.6
30	1.44	1.6	1.9	2.2	----
31	1.42	----	1.9	2.2	----

NOTES—*Brook frozen December 12, 1915, to January 5, 1916, and January 9 to 21, 1916, inclusive. Station discontinued February 29, 1916.

DELAWARE BASIN—STATION NO. 4

DELAWARE RIVER AT PORT JERVIS, N. Y.

DESCRIPTION OF STATION

Location—At two span, steel, through truss, highway bridge between Port Jervis, New York, and Matamoras, Pa.

Records Available—Discharge complete from October 12, 1904, to September 30, 1916. For other records on this river see Delaware River at Riegelsville, N. J.; also Delaware River at Lambertville, N. J., in the 1910-11 report of the Water Supply Commission.

Drainage Area—3,250 square miles.

Gage—A sloping and vertical staff gage, whose elevation of zero is 414.89 feet above mean sea level, is located on the left bank and abutment and is read twice daily by Belle Fuller.

Channel—Both banks are high and do not overflow, and the bed is composed of gravel.

Remarks—The following data have been furnished by the U. S. Geological Survey, who maintain and operate this station.

Discharge Measurements of Delaware River at Port Jervis, N. Y.

(Drainage area, 3,250 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet.	Sec.-ft.	
49	Mar. 27	Burchard	2,770	3.97	6,190	0.2 & 0.8 method
50	April 4	Burchard	5,570	8.62	31,200	0.2 & 0.8 method
51	May 19	Davison	3,100	4.20	6,950	0.2 & 0.8 method
52	Sep. 24	Burchard	1,640	2.09	1,380	0.2 & 0.8 method
53	Sep. 25	Burchard	1,920	2.57	2,200	0.2 & 0.8 method
54	Sep. 25	Burchard	1,850	2.52	2,100	0.2 & 0.8 method
55	Sep. 25	Burchard	1,870	2.46	2,010	0.2 & 0.8 method

Daily Mean Gage Heights, in feet, of Delaware River at Port Jervis, N. Y., for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	2.8	2.35	3.0	4.5	3.4	4.7	11.0	5.0	4.0	3.2	3.7	2.35
2	2.7	2.3	3.0	4.9	6.8	4.5	11.6	4.8	4.7	3.0	3.4	2.15
3	3.2	2.3	2.9	5.8	5.8	4.3	10.4	4.6	4.5	3.0	3.2	2.0
4	3.4	2.3	2.6	5.2	5.5	4.5	8.8	4.4	4.6	3.2	3.0	1.9
5	3.2	2.3	2.6	4.8	5.1	3.9	7.9	4.3	4.2	3.1	2.8	1.9
6	3.3	2.35	2.5	5.6	4.9	3.6	7.5	4.1	3.8	3.0	2.7	1.9
7	3.5	2.4	2.5	5.7	4.4	3.2	7.0	3.9	3.6	2.8	2.6	2.0
8	3.4	2.45	2.5	4.7	3.8	3.3	6.7	3.9	4.0	2.6	2.5	1.9
9	3.2	2.3	2.6	4.6	3.8	3.4	6.2	4.3	4.6	2.8	2.6	1.9
10	3.0	2.4	2.6	4.4	3.8	3.4	6.0	4.0	4.2	3.1	2.8	1.9
11	2.9	2.3	2.4	4.2	*	3.3	5.8	3.8	4.0	3.3	2.9	1.85
12	2.8	2.35	2.3	4.4	-------	3.2	5.6	3.5	4.1	3.5	2.7	1.75
13	2.8	2.35	*	4.2	-------	3.2	6.4	3.4	4.0	3.6	2.7	1.7
14	2.7	2.35	-------	4.4	-------	3.4	7.2	3.2	3.8	4.2	2.5	1.8
15	2.7	2.3	-------	4.2	-------	3.2	8.7	3.2	3.7	4.8	2.4	2.35
16	2.6	2.45	-------	4.0	-------	2.8	7.0	3.1	3.6	3.8	2.3	3.6
17	2.8	3.0	-------	3.7	-------	2.8	6.8	3.6	4.8	3.5	2.2	3.5
18	2.7	2.8	3.0	3.5	-------	2.8	6.6	4.4	5.1	3.4	2.2	3.0
19	2.6	2.9	6.5	3.1	-------	3.2	6.3	4.2	4.6	3.2	2.1	2.7
20	2.6	4.8	6.1	3.2	-------	3.1	5.7	3.9	4.6	3.0	2.0	2.35
21	2.7	4.3	5.1	3.5	-------	3.1	5.3	3.8	4.5	2.8	1.9	2.25
22	2.7	4.1	4.7	3.7	2.5	3.0	5.3	3.5	4.2	2.6	1.9	2.25
23	2.6	3.8	4.3	8.0	2.9	2.9	5.6	3.6	4.0	2.6	1.85	2.1
24	2.4	3.5	4.3	6.2	3.0	2.9	5.9	4.8	3.8	2.7	1.8	2.15
25	2.3	3.4	4.3	6.8	3.2	3.0	5.6	4.4	3.6	2.6	1.9	2.6
26	2.35	3.3	4.3	6.4	7.2	3.2	5.3	4.2	3.8	5.5	2.1	2.35
27	2.4	3.2	7.0	6.2	8.1	3.8	5.7	4.9	3.6	7.3	2.6	2.3
28	2.6	3.2	6.0	8.1	6.4	4.8	6.4	3.8	3.7	6.3	2.35	2.1
29	2.5	3.1	5.7	8.0	5.6	6.1	5.9	4.7	3.6	5.2	2.5	2.1
30	2.45	3.1	4.9	6.5	-------	8.0	5.4	4.5	3.4	4.4	2.6	2.3
31	2.4	-------	4.7	6.0	-------	10.4	-------	4.2	-------	4.0	2.5	-------

NOTE—*River frozen December 13 to 17, 1915, and February 11 to 21, 1916, inclusive.

Daily Discharge, in Second-feet, of Delaware River at Port Jervis, N. Y., for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	2,890	2,010	3,340	7,860	16,800	8,660	50,900	9,840	6,010	3,650	5,050	1,800
2	2,680	1,920	3,340	9,460	19,200	7,890	55,800	9,010	8,600	3,160	4,180	1,470
3	3,830	1,920	3,110	13,500	13,500	7,160	46,000	8,200	7,810	3,160	3,650	1,240
4	4,360	1,920	2,480	10,700	12,100	7,890	33,500	7,430	8,200	3,650	3,160	1,110
5	3,830	1,920	2,480	9,060	10,300	5,820	26,800	7,060	6,700	3,400	2,690	1,110
6	4,090	2,010	2,290	12,600	9,460	4,920	23,900	6,350	5,360	3,160	2,470	1,110
7	4,640	2,100	2,290	13,000	7,520	3,830	20,500	5,680	4,750	2,690	2,260	1,240
8	4,360	2,200	2,290	8,660	5,510	4,090	18,600	5,680	6,010	2,260	2,070	1,110
9	3,830	1,920	2,480	8,270	4,640	4,360	15,700	7,060	8,200	2,690	2,260	1,110
10	3,340	2,100	2,480	7,520	3,830	4,360	14,600	6,010	6,700	3,400	2,690	1,110
11	3,110	1,920	2,100	6,810	*3,340	4,090	13,600	5,360	6,010	3,910	2,920	1,050
12	2,890	2,010	1,920	7,520	3,110	3,830	12,600	4,460	6,350	4,460	2,470	935
13	2,890	2,010	*1,840	6,810	2,680	3,830	16,800	4,180	6,010	4,750	2,470	880
14	2,680	2,010	1,840	7,520	2,480	4,360	21,800	3,650	5,360	6,700	2,070	990
15	2,680	1,920	1,920	6,810	2,480	3,830	32,700	3,650	5,050	9,010	1,890	1,800
16	2,480	2,200	2,100	6,140	2,290	2,890	20,500	3,400	4,750	5,360	1,720	4,750
17	2,890	3,340	2,480	5,210	2,200	2,890	19,200	4,750	9,010	4,460	1,550	4,460
18	2,680	2,890	3,340	4,640	2,100	3,580	18,000	7,430	10,300	4,180	1,550	3,160
19	2,480	3,110	17,400	3,580	2,100	3,830	16,200	6,700	8,200	3,650	1,390	2,470
20	2,480	9,060	15,100	3,830	2,100	3,580	13,100	5,680	8,200	3,160	1,240	1,800
21	2,680	7,160	10,300	4,640	2,100	3,580	11,200	5,360	7,810	2,690	1,110	1,640
22	2,680	6,470	8,660	5,210	2,290	3,340	11,200	4,460	6,700	2,260	1,110	1,640
23	2,480	5,510	7,160	27,500	3,110	3,110	12,600	4,750	6,010	2,260	1,050	1,390
24	2,100	4,640	7,160	15,700	3,340	3,110	14,100	9,010	5,360	2,470	990	1,470
25	1,920	4,360	7,160	19,200	3,830	3,340	12,600	7,430	4,750	2,260	1,110	2,260
26	2,010	4,090	7,160	16,800	21,800	3,830	11,200	6,700	5,360	12,100	1,390	1,800
27	2,100	3,830	20,500	15,700	28,200	5,510	13,100	9,420	4,750	22,500	2,260	1,720
28	2,480	3,830	14,600	28,200	16,800	9,060	16,800	5,360	5,050	16,200	1,800	1,390
29	2,290	3,580	13,000	27,500	12,600	15,100	14,100	8,600	4,750	10,700	2,070	1,390
30	2,200	3,580	9,460	17,400	-------	27,500	11,600	7,810	4,180	7,430	2,260	1,720
31	2,100	-------	8,660	14,600	-------	46,000	-------	6,700	-------	6,010	2,070	-------

NOTE—*River frozen December 13 to 17, 1915, and February 11 to 21, 1916, inclusive, and discharge is only approximate.

Estimated Monthly Discharge of Delaware River at Port Jervis, N. Y.

(Drainage area, 3,250 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	4,640	1,920	2,910	0.895	1.03
November	9,060	1,920	3,250	1.00	1.12
December	20,500	1,840	6,150	1.89	2.18
1916					
January	28,200	3,580	11,350	3.49	4.02
February	28,200	2,100	7,660	2.35	2.53
March	46,000	2,890	7,070	2.17	2.50
April	55,800	11,200	20,600	6.34	7.07
May	9,840	3,400	6,360	1.96	2.26
June	10,300	4,180	6,410	1.97	2.20
July	22,500	2,260	5,410	1.66	1.91
August	5,050	990	2,160	0.665	0.77
September	4,750	880	1,700	0.523	0.58
The year	55,800	880	6,740	2.07	28.17

NOTE—River frozen December 13 to 17, 1915, and February 11 to 21, 1916, inclusive, and discharge is only approximate.

DELAWARE BASIN—STATION NO. 5

BUSHKILL CREEK AT SHOEMAKERS

DESCRIPTION OF STATION

Location—At single span, steel, through truss, highway bridge two miles upstream from Bushkill, Pike County, and two and one-half miles above the mouth.

Records Available—Discharge complete from September 19, 1908, to September 30, 1915, and discharge measurement and gage heights from October 1, 1915, to September 30, 1916.

Drainage Area—115 square miles.

Gage—A standard chain gage, whose elevation of zero is arbitrary, is located on the upstream side of the bridge and is read once daily by George Beaver.

Channel—Both banks are high and not subject to overflow, and the bed is composed of gravel and large rocks.

Remarks—Saw Creek enters from the left a few hundred feet above the station.

Discharge Measurement of Bushkill Creek at Shoemakers, Monroe County

(Drainage area, 115 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet.	Sec.-ft.	
15	July 14	Brown & Heagy	102	1.82	153	0.6 method

Daily Mean Gage Heights, in feet, of Bushkill Creek at Shoemakers, Monroe County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	1.38	1.7	1.8	2.5	2.5	2.7	4.0	2.5	2.2	1.9	2.5	1.36
2	1.6	1.7	1.8	2.4	2.5	2.6	4.1	2.5	2.0	1.8	2.3	1.35
3	1.8	1.6	1.8	2.4	2.5	2.6	3.8	2.4	2.0	1.9	2.2	1.28
4	1.7	1.6	1.8	2.4	2.3	2.5	3.4	2.7	2.2	1.9	2.1	1.27
5	1.6	1.7	1.9	2.4	2.4	2.5	3.3	2.5	2.2	1.8	2.0	1.27
6	1.6	1.7	1.9	2.4	2.3	2.5	3.1	2.4	2.1	1.8	2.0	1.25
7	1.5	1.7	1.8	2.3	2.2	2.6	2.8	2.3	2.2	1.7	1.9	1.25
8	1.7	1.6	1.7	2.3	2.2	2.6	2.8	2.2	2.4	1.6	1.8	1.25
9	1.6	1.6	1.7	2.3	2.1	2.5	2.7	2.2	2.4	1.6	1.8	1.23
10	1.6	1.6	1.8	2.2	2.1	2.4	2.6	2.2	2.4	1.9	1.8	1.22
11	1.6	1.6	1.8	2.2	*2.2	2.4	2.6	2.1	2.3	2.1	1.7	1.19
12	1.5	1.6	1.9	2.2	2.3	2.4	2.5	2.1	2.2	2.1	1.7	1.19
13	1.5	1.6	2.0	2.4	2.3	2.4	2.7	2.0	2.2	2.0	1.7	1.10
14	1.5	1.6	2.0	2.3	2.3	2.4	3.1	2.0	2.2	1.8	1.6	1.10
15	1.5	1.7	2.0	2.2	2.3	2.3	3.5	2.1	2.0	1.8	1.6	1.27
16	1.5	1.8	1.9	2.4	2.3	2.2	3.2	2.0	2.3	1.7	1.6	1.8
17	1.48	1.7	1.9	2.5	2.2	2.2	3.0	2.3	3.4	2.0	1.5	1.6
18	1.46	1.7	2.4	2.5	2.2	2.1	2.9	2.4	3.0	2.0	1.5	1.47
19	1.42	2.0	2.7	2.5	2.3	2.1	2.8	2.3	2.8	1.9	1.5	1.43
20	1.7	2.3	2.6	2.4	2.4	2.0	2.6	2.2	2.7	1.9	1.49	1.38
21	2.0	2.2	2.6	2.6	2.6	2.0	2.6	2.2	2.6	1.7	1.45	1.32
22	1.9	2.2	2.6	2.2	2.6	1.9	2.7	2.2	2.6	1.7	1.36	1.32
23	1.8	2.0	2.5	2.4	2.6	2.0	2.8	2.3	2.6	1.7	1.36	1.32
24	1.8	2.0	2.4	2.3	2.5	2.1	2.7	2.3	2.4	1.7	1.5	1.32
25	1.7	2.0	2.4	2.3	2.5	2.0	2.6	2.2	2.4	1.6	1.32	1.38
26	1.7	1.9	2.6	2.3	3.0	2.2	2.6	2.2	2.2	3.0	1.45	1.36
27	1.8	1.9	2.6	2.8	2.9	2.3	2.6	2.1	2.2	4.0	1.43	1.28
28	1.7	1.9	2.4	2.6	2.8	2.6	2.8	2.1	2.1	3.6	1.40	1.25
29	1.7	1.9	2.5	2.6	2.8	2.7	2.7	2.4	2.1	3.0	1.40	1.22
30	1.7	1.8	2.6	2.5	-------	3.0	2.6	2.4	2.0	2.8	1.39	1.40
31	1.7	-------	2.5	2.5	-------	3.7	-------	2.3	-------	2.6	1.38	-------

NOTE—*Creek frozen February 11 to 26, 1916, inclusive.

DELAWARE BASIN—STATION NO. 6

POCONO CREEK NEAR STROUDSBURG

DESCRIPTION OF STATION

Location—At single span, wooden covered, highway bridge known as "Brands Bridge," about two miles above Stroudsburg, Monroe County.

Records Available—Discharge complete from August 10, 1911, to September 30, 1915, and discharge measurement and gage heights from October 1, 1915, to September 30, 1916.

Drainage Area—38 square miles.

Gage—A sectional chain gage, whose elevation of zero is arbitrary, is located on the upstream side of the bridge and is read twice daily by George K. Brands.

Channel—Both banks are high and do not overflow, and the bed is composed of small stones and gravel.

Remarks—During extreme stages water passes around the bridge, but this happens but once or twice a year.

Discharge Measurement of Pocono Creek near Stroudsburg, Monroe County

(Drainage area, 38 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
13	1916 July 14	Brown & Heagy,	Sq. ft. 35	Feet 2.41	Sec.-ft. 56	Surface method

Daily Mean Gage Heights, in feet, of Pocono Creek near Stroudsburg, Monroe County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	2.20	2.24	2.44	3.1	3.0	2.8	4.9	2.9	2.5	2.7	2.8	2.28
2	2.7	2.24	2.40	3.2	3.0	2.8	4.5	3.0	2.4	2.7	2.6	2.21
3	2.5	2.24	2.36	3.1	3.0	2.8	4.0	2.9	2.5	2.9	2.7	2.18
4	2.40	2.25	2.32	3.0	2.9	2.8	3.8	3.1	2.6	2.9	2.7	2.16
5	2.38	2.35	2.36	3.0	2.9	2.7	3.5	2.9	2.5	2.6	2.6	2.09
6	2.5	2.26	2.36	3.3	2.9	2.8	3.4	2.8	2.5	2.6	2.6	2.10
7	2.38	2.26	2.32	3.0	2.8	2.9	3.2	2.8	2.6	2.45	2.5	2.12
8	2.45	2.22	2.23	2.9	2.7	2.9	3.0	2.8	3.0	2.30	2.5	2.06
9	2.30	2.31	2.22	2.9	2.8	2.8	2.9	2.8	3.0	2.5	2.5	2.09
10	2.15	2.26	2.29	2.9	2.7	2.7	3.1	2.6	2.9	2.44	2.29	1.90
11	2.24	2.27	2.34	2.8	2.6	2.8	3.0	2.7	3.1	2.5	2.38	2.03
12	2.29	2.30	2.39	2.8	2.6	2.7	2.9	2.7	2.9	2.5	2.40	2.00
13	2.28	2.39	2.6	3.3	2.6	2.7	3.0	2.6	2.8	2.5	2.36	2.12
14	2.24	2.26	2.5	3.1	*2.7	2.7	4.3	2.5	2.7	2.45	2.38	2.09
15	2.21	2.41	2.6	*2.9	2.8	2.8	3.9	2.5	2.6	2.38	2.34	3.0
16	2.30	2.32	2.6	2.9	2.8	2.7	3.7	2.6	3.3	2.37	2.34	2.9
17	2.27	2.27	2.5	2.8	2.8	2.7	3.6	3.3	4.0	2.7	2.38	2.32
18	2.29	2.27	3.6	2.8	2.8	2.7	3.3	2.9	3.6	2.7	2.32	2.27
19	2.26	3.0	3.3	2.9	2.6	2.8	3.1	2.8	3.5	2.5	2.30	2.18
20	2.5	2.9	3.1	2.9	2.5	2.7	2.9	2.7	3.2	2.28	2.20	2.02
21	2.7	2.8	2.9	2.9	2.6	2.7	2.8	2.7	3.3	2.38	2.30	2.18
22	2.6	2.7	2.8	3.2	2.6	2.6	3.1	2.6	3.2	2.38	2.28	2.05
23	2.6	2.6	2.8	3.1	2.7	2.7	3.3	3.0	3.0	2.38	2.22	2.16
24	2.6	2.6	2.7	2.9	2.8	2.8	3.2	2.8	2.9	2.36	2.25	2.18
25	2.5	2.6	2.7	2.8	3.3	2.8	3.1	2.7	2.9	2.5	2.27	2.12
26	2.39	2.6	3.6	2.8	3.5	3.1	3.1	2.7	2.8	5.3	2.30	2.12
27	2.44	2.5	2.9	3.1	3.2	3.3	3.3	2.7	2.7	4.5	2.25	2.09
28	2.39	2.5	3.2	3.0	3.1	3.6	3.4	2.6	3.4	3.9	2.29	2.17
29	2.35	2.39	3.0	2.9	2.9	4.1	3.2	2.6	2.9	3.6	2.28	2.24
30	2.31	2.5	2.9	2.9	-------	4.6	3.1	2.44	2.7	3.1	2.12	2.16
31	2.26	-------	2.9	2.9	-------	5.0	-------	2.5	-------	2.9	2.22	-------

NOTE.—*Creek frozen January 15 to 22, and February 14 to 25, 1916, inclusive.

DELAWARE BASIN—STATION NO. 7

McMICHAELS CREEK NEAR STROUDSBURG

DESCRIPTION OF STATION

Location—At single span, railroad bridge of Wilkes-Barre and Eastern Railroad near car shops above Stroudsburg, Monroe County.

Records Available—Discharge complete from August 10, 1911, to September 30, 1915, and discharge measurement and gage heights from October 1, 1915, to September 30, 1916. For other records on this creek see McMichaels Creek at Strousburg in the 1910-11 report of the Water Supply Commission.

Drainage Area—60 square miles.

Gage—A sectional chain gage, whose elevation of zero is arbitrary, is located on the downstream side of the bridge and is read twice daily by A. W. Marvin.

Channel—Both banks are high and do not overflow, and the bed is composed of stones and mud. The thread of the current passes under the bridge at a slight angle.

Discharge Measurement of McMichaels Creek near Stroudsburg, Monroe County
(Drainage area, 60 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet.	Sec.-ft.	
16	July 14	Brown & Heagy	172	3.45	128	0.6 method

Daily Mean Gage Heights, in feet, of McMichaels Creek near Stroudsburg, Monroe County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	3.20	3.16	3.26	3.7	3.8	3.9	4.9	3.8	3.29	3.6	4.0	3.18
2	3.22	3.17	3.24	4.0	3.7	3.9	4.6	3.7	3.18	3.41	3.8	3.07
3	3.6	3.16	3.22	3.9	3.7	3.8	4.5	3.8	3.37	3.7	3.8	3.13
4	3.45	3.16	3.20	3.8	3.7	3.8	4.2	4.0	3.22	3.45	3.7	3.06
5	3.30	3.08	3.19	3.8	3.6	3.8	4.2	3.8	3.36	3.5	3.7	3.15
6	3.34	3.14	3.17	3.7	3.6	3.8	4.0	3.8	3.32	3.34	3.6	2.98
7	3.30	3.12	3.17	3.7	3.6	3.7	4.0	3.8	3.45	3.39	3.6	3.06
8	3.28	3.13	3.15	3.7	3.6	3.6	3.8	3.6	3.38	3.31	3.6	3.00
9	3.31	3.13	3.13	3.7	3.6	3.6	3.9	3.7	3.43	3.5	3.6	3.14
10	3.19	3.01	3.12	3.6	3.6	3.6	3.8	3.6	3.37	3.39	3.42	2.96
11	3.28	3.10	3.11	3.6	3.6	3.6	3.9	3.7	3.5	3.6	3.43	3.11
12	3.26	3.11	3.09	3.6	3.6	3.6	3.8	3.5	3.39	3.40	3.39	3.03
13	3.18	3.09	3.09	3.6	3.5	3.5	3.8	3.6	3.41	3.6	3.44	3.08
14	3.25	3.21	3.06	3.5	3.5	3.5	4.9	3.45	3.33	3.40	3.32	2.97
15	3.16	3.24	3.05	3.6	*3.5	3.6	5.0	3.5	3.42	3.45	3.36	3.7
16	3.24	3.25	3.09	3.6	3.5	3.6	4.4	3.42	3.7	3.34	3.25	3.38
17	3.24	3.21	3.31	3.6	3.44	3.7	4.2	3.7	4.4	3.6	3.44	3.21
18	3.21	3.21	4.6	3.6	3.43	3.6	4.0	3.6	3.9	3.44	3.29	3.05
19	3.16	3.6	4.0	3.6	3.43	3.6	4.0	3.7	4.0	3.48	3.35	3.17
20	3.38	3.6	3.6	3.6	3.43	3.6	3.9	3.49	3.7	3.31	3.19	3.03
21	3.5	3.6	3.6	3.6	3.39	3.5	4.2	3.6	3.8	3.6	3.28	3.11
22	3.29	3.6	3.6	3.7	3.38	3.5	4.1	3.47	3.8	3.5	3.20	2.97
23	3.23	3.5	3.6	3.7	3.39	3.45	3.9	3.8	3.7	3.5	3.25	3.13
24	3.22	3.4	3.6	3.7	3.32	3.49	3.8	3.47	3.46	3.41	3.13	3.14
25	3.12	3.29	3.7	3.7	4.3	3.8	3.8	3.45	3.5	3.7	3.23	3.23
26	3.22	3.36	3.7	3.7	4.3	4.2	3.8	3.31	3.37	5.1	3.16	3.09
27	3.29	3.32	3.6	3.6	4.1	4.6	4.4	3.41	3.43	6.6	3.24	3.14
28	3.25	3.30	3.6	3.6	4.0	4.7	4.2	3.36	3.49	5.4	3.16	2.98
29	3.22	3.32	3.6	3.6	4.0	5.0	4.1	3.41	3.6	4.9	3.26	3.15
30	3.11	3.21	3.7	3.6	-------	5.3	3.8	3.26	3.5	4.5	3.13	3.25
31	3.17	-------	3.6	3.6	-------	5.2	-------	3.31	-------	4.2	3.20	-------

NOTE—*Creek frozen February 15 to 21, 1916, inclusive.

DELAWARE BASIN—STATION NO. 8

LEHIGH RIVER AT TANNERY

DESCRIPTION OF STATION

Location—At single span, steel, through truss, highway bridge at Tannery, Carbon County.

Records Available—Discharge measurements and gage heights from June 23, 1914, to September 30, 1916. For other records on this river see Lehigh River at Bethlehem.

Drainage Area—335 square miles.

Gage—A standard chain gage, whose elevation of zero is arbitrary, is located on the downstream side of the bridge and is read twice daily by Howard Flick.

Channel—Both banks are high and not subject to overflow, and the bed is composed of large stones and gravel.

Discharge Measurement of Lehigh River at Tannery, Carbon County.

(Drainage area, 335 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1915		Sq. ft.	Feet	Sec.-ft.	
11	July 10	Brown & Heagy	494	6.17	3,420	Surface method

Daily Mean Gage Heights, in feet, of Lehigh River at Tannery, Carbon County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	3.0	3.0	3.2	4.4	4.5	3.8	7.2	6.4	3.6	4.7	4.8	3.4
2	3.1	3.0	3.2	4.5	4.6	3.8	7.1	6.2	3.5	4.5	4.2	3.2
3	3.5	2.9	3.2	4.4	4.6	3.7	7.1	6.2	3.5	4.4	3.9	3.4
4	3.4	2.8	3.2	4.2	4.5	3.6	7.1	6.2	3.8	4.2	3.6	3.3
5	3.4	2.7	3.3	4.2	4.4	3.6	7.0	6.1	3.9	4.2	3.3	3.2
6	3.6	2.7	3.3	4.2	4.4	3.6	7.0	6.0	3.9	4.0	3.2	3.3
7	3.4	2.6	3.3	4.1	4.3	3.6	6.8	5.8	4.0	3.8	3.2	3.2
8	3.4	2.5	3.4	4.6	4.2	3.7	6.8	5.7	4.0	3.7	3.2	3.1
9	3.3	2.9	3.5	4.5	4.1	3.6	6.8	5.5	4.0	5.3	3.2	3.0
10	3.2	2.8	*3.4	4.4	4.0	3.6	6.8	5.4	3.9	6.1	3.3	2.9
11	3.2	2.7	3.4	4.4	4.0	3.5	6.9	5.3	3.8	6.0	3.2	2.9
12	3.1	2.6	3.4	4.4	4.0	3.4	6.8	5.2	3.6	6.0	3.2	2.8
13	3.0	2.6	3.7	4.5	4.0	3.6	6.9	5.0	3.5	5.9	3.1	2.8
14	3.0	2.7	3.7	4.6	4.0	3.6	7.0	5.0	3.6	5.9	3.1	2.8
15	3.0	3.2	3.6	4.6	3.9	3.8	7.0	5.0	3.7	5.7	3.1	2.8
16	3.0	3.1	3.6	4.6	3.8	4.0	7.0	4.9	3.9	5.6	3.0	2.7
17	3.0	3.1	3.5	4.6	3.7	4.2	6.9	4.8	4.0	5.4	3.0	2.7
18	3.0	3.0	4.2	4.5	3.7	4.2	6.9	4.7	4.2	5.4	3.1	2.8
19	3.1	3.2	4.6	4.4	3.6	4.1	6.9	4.6	4.4	5.4	3.3	3.0
20	3.3	4.2	4.6	4.4	3.6	4.1	6.8	4.5	4.9	5.2	3.3	2.9
21	3.3	4.2	4.5	4.4	3.6	4.0	6.8	4.4	5.1	5.0	3.3	2.9
22	3.2	4.0	4.4	4.7	3.6	4.0	6.9	4.4	4.9	4.9	3.3	2.8
23	3.2	4.0	4.3	4.9	3.7	4.0	7.0	4.2	4.8	4.6	3.4	3.1
24	3.1	3.9	4.1	4.8	3.8	4.0	6.9	4.3	4.7	4.5	3.8	3.3
25	3.1	3.8	4.0	4.6	4.0	4.0	6.9	4.2	4.6	4.7	3.8	3.5
26	3.2	3.6	5.1	4.5	4.0	4.0	6.9	4.0	4.6	6.5	3.8	3.4
27	3.4	3.5	5.0	4.4	4.0	4.8	6.8	3.9	4.5	6.8	3.8	3.2
28	3.3	3.3	4.8	4.3	4.0	5.2	6.6	3.8	5.0	6.7	3.9	3.0
29	3.3	3.2	4.7	4.2	3.9	5.8	6.5	3.6	4.9	6.5	3.8	3.1
30	3.2	3.2	4.5	4.4	-------	6.0	6.5	3.6	4.8	6.3	3.7	3.2
31	3.1	-------	4.3	4.6	-------	7.2	-------	3.6	-------	6.2	3.4	-------

NOTE—*River partly closed by ice December 10 to 1:30 p. m. December 18, 1915, inclusive.

DELAWARE BASIN—STATION NO. 9

LEHIGH RIVER AT BETHLEHEM

DESCRIPTION OF STATION

Location.—At nine span, steel, through truss, highway bridge with three spans over the normal river channel at New Street, Bethlehem, Northampton County.

Records Available.—Discharge complete from September 22, 1902, to February 13, 1905, and from April 26, 1909, to September 30, 1916. For other records on this river see Lehigh River at Tannery.

Drainage Area.—1,235 square miles.

Gage.—A standard chain gage, whose elevation of zero is 210.64 feet above mean sea level, is located on the downstream side of the bridge and is read twice daily by John E. Santee.

Channel.—The right bank is high and does not overflow, the left bank is low and overflows at high stages, and the bed is composed of sand and gravel.

Remarks.—The Lehigh Canal follows the left bank and passes over Monocacy Creek and under the left span of the bridge. Monocacy Creek passes under the canal on the left bank and under the bridge, entering the river a short distance below.

Discharge Measurement of Lehigh River at Bethlehem, Northampton County

(Drainage area, 1,235 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
51	June 23	Reckord & Shade	1,276	3.71	3,290	0.6 method

Daily Mean Gage Heights, in feet, of Lehigh River at Bethlehem, Northampton County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	2.1	2.0	2.3	3.4	3.5	3.3	7.1	3.5	2.6	3.1	3.7	2.0
2	2.3	1.90	2.3	3.6	3.6	3.3	6.6	3.4	2.6	3.0	3.4	1.97
3	2.3	1.88	2.2	4.2	3.4	3.0	6.0	3.2	2.5	3.5	3.3	1.85
4	2.3	1.89	2.2	3.8	3.0	2.6	5.3	3.4	2.8	3.1	3.1	1.92
5	2.3	1.78	2.2	3.6	3.0	2.6	4.9	3.4	2.7	3.0	3.0	1.89
6	2.4	1.84	2.2	4.0	3.2	2.6	4.6	3.3	2.5	2.8	3.0	1.83
7	2.3	1.81	2.2	4.1	3.2	2.7	4.3	3.2	2.7	2.7	3.0	1.86
8	2.3	1.94	2.2	4.2	2.7	3.0	4.1	3.2	3.2	2.6	2.8	1.88
9	2.2	2.0	2.1	3.3	2.9	2.8	4.1	3.0	3.2	2.6	2.7	1.91
10	2.1	1.79	2.1	3.3	2.7	2.7	4.2	3.0	3.2	3.1	2.6	1.83
11	2.1	1.81	1.91	3.4	2.6	2.6	4.0	2.9	2.9	3.6	2.6	1.88
12	2.0	1.78	1.88	3.5	2.7	2.7	3.9	2.8	2.8	3.2	2.6	1.82
13	2.0	1.75	2.1	3.6	2.7	2.9	3.8	2.8	2.7	3.1	2.4	1.81
14	1.99	1.77	2.0	4.2	2.7	3.8	4.8	2.7	2.6	3.1	2.4	1.80
15	2.0	2.1	1.92	3.4	2.7	3.4	6.2	2.8	2.6	2.8	2.4	2.5
16	2.0	2.1	1.97	3.4	2.6	3.1	5.3	2.7	3.0	2.7	2.4	2.8
17	1.95	2.0	2.2	3.3	2.8	2.7	5.0	2.9	5.7	3.1	2.3	2.2
18	1.91	2.0	3.0	2.9	2.8	2.7	4.5	3.0	5.2	3.3	2.3	2.1
19	1.90	2.4	4.7	2.9	2.6	2.8	4.2	2.8	4.6	3.1	2.2	1.98
20	2.1	3.7	4.0	2.8	2.4	2.6	3.5	2.7	4.4	2.9	2.2	1.98
21	2.4	3.2	3.4	3.0	2.5	3.0	3.8	2.7	4.0	2.8	2.2	1.92
22	2.2	3.0	3.1	3.5	2.5	2.9	4.3	2.7	4.0	4.5	2.1	1.92
23	2.1	2.8	3.0	4.3	2.6	2.6	4.2	2.8	3.7	3.6	2.1	1.98
24	2.0	2.6	3.0	3.8	2.6	3.0	4.1	3.3	3.5	3.3	2.1	1.93
25	2.1	2.5	2.9	3.5	3.1	3.8	3.9	2.8	3.4	3.2	2.1	1.97
26	1.95	2.5	3.6	3.4	4.5	4.3	3.8	2.7	3.4	†8.6	2.0	1.93
27	2.1	2.5	4.2	3.4	3.7	4.9	3.8	2.7	3.2	8.2	1.93	1.88
28	2.1	2.5	3.9	3.5	3.3	5.3	3.9	2.6	3.3	6.4	2.2	1.85
29	2.1	2.5	4.0	3.5	3.3	6.0	3.8	2.6	3.8	5.1	2.1	1.83
30	2.0	2.4	3.8	3.4	-------	6.6	3.6	2.8	3.5	4.4	2.1	1.93
31	1.95	-------	3.3	3.4	-------	7.4	-------	2.8	-------	4.0	2.0	-------

NOTE—†Maximum estimated 9.7 feet at 9 p. m.

Daily Discharge, in Second-feet, of Lehigh River at Bethlehem, Northampton County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	795	700	995	2,420	2,580	2,260	11,100	2,620	1,320	2,000	2,960	700
2	995	610	995	2,750	2,750	2,260	9,720	2,460	1,320	1,860	2,460	673
3	995	593	895	3,870	2,420	1,810	8,180	2,140	1,220	2,620	2,300	568
4	995	602	895	3,100	1,810	1,280	6,420	2,460	1,580	2,000	2,900	628
5	995	509	895	2,750	1,810	1,280	5,440	2,460	1,440	1,860	1,860	602
6	1,100	559	895	3,470	2,100	1,280	4,760	2,300	1,220	1,580	1,860	551
7	995	534	895	3,670	2,100	1,400	4,120	2,140	1,440	1,440	1,860	576
8	995	646	895	3,870	1,400	1,810	3,720	2,140	2,140	1,320	1,580	593
9	895	700	795	2,260	1,670	1,530	3,720	1,860	2,140	1,320	1,440	619
10	795	517	795	2,260	1,400	1,400	3,920	1,860	2,140	2,000	1,320	551
11	795	534	619	2,420	1,280	1,280	3,520	1,720	1,720	2,800	1,320	593
12	700	509	548	2,580	1,400	1,400	3,320	1,580	1,580	2,140	1,320	542
13	700	495	750	2,750	1,400	1,670	3,140	1,580	1,440	2,000	1,100	534
14	691	501	655	3,870	1,400	3,100	5,220	1,440	1,320	2,000	1,100	525
15	700	795	583	2,420	1,400	2,420	8,680	1,580	1,320	1,580	1,100	1,220
16	700	795	628	2,420	1,280	1,950	6,420	1,440	1,860	1,440	1,100	1,580
17	655	700	850	2,260	1,530	1,400	5,680	1,720	7,420	2,000	995	895
18	619	700	1,810	1,670	1,530	1,400	4,540	1,860	6,180	2,300	995	795
19	610	1,100	4,940	1,670	1,280	1,530	3,920	1,580	4,760	2,000	895	682
20	795	2,960	3,470	1,530	1,060	1,280	2,620	1,440	4,320	1,720	895	682
21	1,100	2,140	2,420	1,810	1,170	1,810	3,140	1,440	3,520	1,580	895	628
22	895	1,860	1,950	2,580	1,170	1,670	4,120	1,440	3,520	4,540	795	628
23	795	1,580	1,810	4,070	1,280	1,280	3,920	1,580	2,960	2,800	795	682
24	700	1,320	1,810	3,100	1,280	1,810	3,720	2,300	2,620	2,300	795	637
25	795	1,220	1,670	2,580	1,950	3,100	3,320	1,580	2,460	2,140	795	673
26	655	1,220	2,750	2,420	4,500	4,070	3,140	1,440	2,460	†15,300	700	637
27	795	1,220	3,870	2,420	2,920	5,400	3,140	1,440	2,140	14,100	637	593
28	795	1,220	3,280	2,580	2,260	6,380	3,320	1,320	2,300	9,200	895	568
29	795	1,220	3,470	2,580	2,260	8,180	3,140	1,320	3,140	5,920	795	551
30	700	1,100	3,100	2,420	-------	9,720	2,800	1,580	2,620	4,320	795	637
31	655	-------	2,260	2,420	-------	11,900	-------	1,580	-------	3,520	700	-------

NOTES—†Maximum=18,600 second-feet. October 1 to December 12, 1915, and March 29 to September 30, 1916, inclusive, 45 second-feet added to daily discharge for canal.

Estimated Monthly Discharge of Lehigh River at Bethlehem, Northampton County

(Drainage area, 1,235 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	1,100	610	813	0.66	0.76
November	2,960	495	972	0.79	0.88
December	4,940	548	1,680	1.36	1.57
1916					
January	4,070	1,530	2,680	2.17	2.50
February	4,500	1,060	1,810	1.47	1.58
March	11,900	1,280	2,870	2.32	2.68
April	11,100	2,620	4,730	3.83	4.27
May	2,620	1,320	1,790	1.45	1.67
June	7,420	1,220	2,520	2.04	2.28
July	18,600	1,320	3,350	2.71	3.12
August	2,960	637	1,260	1.02	1.18
September	1,580	525	678	0.55	0.61
The year	18,600	495	2,100	1.70	23.10

NOTE—October 1 to December 12, 1915, and March 29 to September 30, 1916, inclusive, 45 second-feet added to daily discharge for canal.

DELAWARE BASIN—STATION NO. 10

DELAWARE RIVER AT RIEGELSVILLE, N. J.

DESCRIPTION OF STATION

Location.—At three span, steel, suspension, highway bridge between Riegelsville, Pa., and Riegelsville, N. J.

Records Available.—Discharge complete from July 3, 1906, to September 30, 1916. For other records on this river see Delaware River at Port Jervis, N. Y.; also Delaware River at Lambertville, N. J., in the 1911 report of the Water Supply Commission.

Drainage Area.—6,430 square miles.

Gage.—An inclined staff gage, whose elevation of zero is arbitrary, is located on the left bank under the upstream side of the bridge. A standard chain gage on the same datum is attached to the upstream handrail on the middle span of the bridge, and readings are sometimes taken with this gage during ice or flood conditions. Gage heights are observed twice daily by John H. Deemer.

Channel.—Both banks are high and not subject to overflow, and the bed is composed of gravel and boulders.

Remarks.—The Delaware Division Canal runs along the Pennsylvania shore about 200 feet from the river and is measured at the highway bridge a short distance above the river bridge. The following data have been furnished by the U. S. Geological Survey.

Discharge Measurement of Delaware River at Riegelsville, N. J.

(Drainage area, 6,430 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
24	1916 Sep. 1	Jackson	Sq. ft. 3,660	Feet 3.19	Sec.-ft. 3,850	0.2 & 0.8 method 233 second-feet in canal

Daily Mean Gage Heights, in feet, of Delaware River at Riegelsville, N. J., for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	3.4	3.2	4.0	6.4	8.2	7.1	18.4	7.6	5.3	4.8	6.0	3.2
2	3.5	3.1	3.9	6.5	9.7	6.9	17.8	7.1	5.0	4.4	5.4	3.0
3	3.7	3.0	3.8	7.8	8.8	6.2	†18.4	6.7	4.7	4.9	5.0	2.8
4	4.2	3.0	3.7	8.2	7.5	5.6	14.1	6.5	4.8	4.4	4.7	2.75
5	4.1	3.0	3.7	7.2	6.8	5.4	12.8	6.4	5.6	4.4	4.4	2.7
6	4.1	3.0	3.6	7.4	6.6	5.0	11.1	6.2	5.1	4.3	4.3	2.6
7	4.1	2.95	3.4	8.5	6.4	4.5	10.8	5.8	4.9	4.0	4.2	2.6
8	4.4	3.0	3.4	7.6	5.7	5.0	10.2	5.6	5.6	3.8	4.1	2.7
9	4.2	3.0	3.3	6.2	5.2	4.8	9.6	5.6	5.9	3.7	3.8	2.75
10	3.9	3.0	3.2	6.0	5.3	4.9	9.2	5.8	5.9	4.0	3.9	2.6
11	3.8	3.0	3.0	6.0	5.1	4.8	8.7	5.5	5.6	5.0	3.8	2.5
12	3.6	3.0	2.9	6.3	4.8	4.6	8.3	5.1	5.6	5.0	3.8	2.6
13	3.5	3.0	3.0	6.4	4.5	4.8	8.9	4.9	5.4	4.9	3.9	2.45
14	3.5	2.95	2.9	7.9	3.7	5.6	10.2	4.6	5.1	4.9	3.8	2.45
15	3.4	3.0	2.8	5.8	4.0	5.3	13.5	4.6	4.9	5.7	3.6	2.6
16	3.3	3.2	2.9	5.5	4.1	4.8	12.9	4.6	4.8	5.5	3.3	3.9
17	3.3	3.4	3.3	5.3	4.4	4.3	11.0	4.9	7.3	4.7	3.4	4.6
18	3.3	3.5	3.7	4.6	4.6	4.3	10.3	5.6	9.0	5.1	3.2	4.0
19	3.4	3.6	6.6	4.2	4.3	4.4	9.8	5.9	7.9	4.7	3.1	3.8
20	3.5	4.9	9.6	4.3	4.0	4.4	8.9	5.6	7.4	4.5	3.0	3.4
21	3.9	6.1	8.0	4.4	4.0	4.5	8.2	5.2	7.0	4.2	3.0	3.1
22	3.6	5.7	6.7	5.0	3.9	4.7	8.0	4.9	6.8	5.2	2.9	3.0
23	3.6	5.2	6.0	6.3	4.0	4.4	8.3	4.9	6.4	4.4	2.8	2.9
24	3.4	4.9	5.9	10.4	4.1	4.4	8.9	5.5	5.8	4.1	2.8	2.9
25	3.2	4.6	5.8	8.4	4.4	4.5	8.2	6.2	5.4	4.1	2.8	2.8
26	3.2	4.4	6.6	7.6	7.0	5.4	7.8	5.7	5.4	8.3	2.8	3.2
27	3.2	4.3	9.6	8.0	9.8	6.6	7.9	5.2	5.3	14.7	2.75	2.95
28	3.2	4.2	9.7	9.7	9.1	8.0	8.6	4.9	5.2	12.3	3.3	2.85
29	3.4	4.1	9.0	11.8	7.5	10.3	9.0	5.0	5.7	9.5	3.2	2.75
30	3.3	4.0	7.4	10.4	-------	12.3	8.2	6.3	5.2	8.0	3.2	2.9
31	3.2	-------	6.8	8.8	-------	17.2	-------	5.8	-------	6.7	3.2	-------

NOTE—†Maximum 19.3 feet at 8 a. m.

Daily Discharge, in Second-feet, of Delaware River at Riegelsville, N. J., for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	4,420	3,880	6,230	14,600	22,600	17,500	90,700	19,700	10,500	8,820	13,100	3,880
2	4,710	3,630	5,920	15,000	30,400	16,700	86,100	17,500	9,500	7,490	10,900	3,390
3	5,310	3,390	5,610	20,700	25,600	13,900	†90,700	15,800	8,480	9,160	9,500	2,940
4	6,850	3,390	5,310	22,600	19,300	11,600	58,800	15,000	8,820	7,490	8,480	2,840
5	6,540	3,390	5,310	18,000	16,300	10,900	49,700	14,600	11,600	7,490	7,490	2,730
6	6,540	3,390	5,010	18,800	15,400	9,500	38,700	13,900	9,840	7,170	7,170	2,530
7	6,540	3,280	4,420	24,000	14,600	7,830	36,900	12,400	9,160	6,230	6,850	2,530
8	7,490	3,390	4,420	19,700	12,000	9,500	33,300	11,600	11,600	5,610	6,540	2,730
9	6,850	3,390	4,140	13,900	10,200	8,820	29,900	11,600	12,700	5,310	5,610	2,840
10	5,920	3,390	3,880	13,100	10,500	9,160	27,700	12,400	12,700	6,230	5,920	2,530
11	5,610	3,390	3,390	13,100	9,840	8,820	25,000	11,200	11,600	9,500	5,610	2,340
12	5,010	3,390	3,160	14,200	8,820	8,160	23,000	9,840	11,600	9,500	5,610	2,530
13	4,710	3,390	3,390	14,600	7,820	8,820	26,100	9,160	10,900	9,160	5,920	2,250
14	4,710	3,280	3,160	17,100	5,310	11,600	33,300	8,150	9,840	9,160	5,610	2,250
15	4,420	3,390	2,940	12,400	6,230	10,500	54,600	8,150	9,160	12,000	5,010	2,530
16	4,140	3,880	3,160	11,200	6,540	8,820	50,400	8,150	8,820	11,200	4,140	5,920
17	4,140	4,420	4,140	10,500	7,490	7,170	38,100	9,160	18,400	8,480	4,420	8,150
18	4,140	4,710	5,310	8,150	8,150	7,170	33,900	11,600	26,600	9,840	3,880	6,230
19	4,420	5,010	15,400	6,850	7,170	7,490	31,000	12,700	21,100	8,480	3,630	5,610
20	4,710	9,160	29,900	7,170	6,230	7,490	23,100	11,600	18,800	7,820	3,390	4,420
21	5,920	13,500	21,600	7,490	6,230	7,820	22,600	10,200	17,100	6,850	3,390	3,630
22	5,010	12,000	15,800	9,500	5,920	8,480	21,600	9,160	16,300	10,200	3,160	3,390
23	5,010	10,200	13,100	14,200	6,230	7,490	23,000	9,160	14,600	7,490	2,940	3,160
24	4,420	9,160	12,700	34,500	6,540	7,490	26,100	11,200	12,400	6,540	2,940	3,160
25	3,880	8,150	12,400	23,500	7,490	7,820	22,600	13,900	10,900	6,540	2,940	2,940
26	3,880	7,490	15,400	19,700	17,100	10,900	20,700	12,000	10,900	23,000	2,940	3,880
27	3,880	7,170	29,900	21,600	31,000	15,400	21,100	10,200	10,500	63,100	2,840	3,290
28	3,880	6,850	30,400	30,400	27,100	21,600	24,500	9,160	10,200	46,400	4,140	3,050
29	4,420	6,540	26,600	43,100	19,300	33,900	26,600	9,500	12,000	29,300	3,880	2,840
30	4,140	6,230	18,800	34,500	-------	46,400	22,600	14,200	10,200	21,600	3,880	3,160
31	3,880	-------	16,300	25,600	-------	81,600	-------	12,400	-------	15,800	3,880	-------

NOTES—†Maximum=97,700 second-feet. Add 250 second-feet for canal October 1 to December 12, 1915, and March 15 to September 30, 1916.

Estimated Monthly Discharge of Delaware River at Riegelsville, N. J.

(Drainage area, 6,430 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	7,490	3,880	5,020	0.820	0.95
November	13,500	3,280	5,530	0.899	1.00
December	29,900	2,940	10,900	1.71	1.97
1916					
January	43,100	6,850	18,000	2.80	3.23
February	31,000	5,310	13,000	2.02	2.18
March	81,600	7,170	14,500	2.27	2.62
April	90,700	20,700	37,200	5.82	6.49
May	19,700	8,150	11,800	1.87	2.16
June	26,600	8,480	12,600	1.99	2.22
July	63,100	5,310	13,000	2.05	2.36
August	13,100	2,840	5,350	0.871	1.00
September	8,150	2,250	3,460	0.575	0.64
The year,	90,700	2,250	12,500	1.97	26.82

NOTE—In order to determine the discharge per square mile and the run-off depth in inches, 250 second-feet were added October 1 to December 12, 1915, and March 15 to September 30, 1916, before computing the discharge per square mile. Hence the first three columns indicate the actual quantity of water available in the river and the two remaining columns represent the actual run-off from the drainage area above Riegelsville, including the discharge of the canal.

DELAWARE BASIN—STATION NO. 11

SCHUYLKILL RIVER AT SCHUYLKILL HAVEN

DESCRIPTION OF STATION

Location.—At five arch, stone masonry, P. & R. Railroad Bridge at Schuylkill Haven, Schuylkill County.

Records Available.—Discharge complete from May 7, 1914, to September 30, 1916. For other records on this river see Schuylkill River at Reading and Conshohocken; also Schuylkill River at Fairmount Dam, Philadelphia, in the 1910-11 and 1912 reports of the Water Supply Commission.

Drainage Area.—127 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the downstream side of the bridge and is read twice daily by Edward Zimmerman.

Channel.—Both banks are high and not subject to overflow, and the bed is culm covered and not permanent.

Discharge Measurements of Schuylkill River at Schuylkill Haven, Schuylkill County

(Drainage area, 127 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
13	Mar. 17	Boehringer	113	1.64	165	0.6 method
14	April 19	Boehringer	181	2.83	381	Surface & 0.6 method
15	June 22	Reckord & Shade	276	3.18	560	0.6 method
16	July 26	Brown	589	5.16	2057	Surface method
17	July 27	Brown	489	4.69	1523	Surface method
18	Sept. 1	Brown	48	1.46	80	0.6 method

Daily Mean Gage Heights, in feet, of Schuylkill River at Schuylkill Haven, Schuylkill County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	1.5	1.04	1.30	2.0	2.0	1.9	4.2	2.5	1.6	2.3	3.0	1.5
2	1.6	1.00	1.24	2.6	2.2	1.7	3.9	2.4	1.5	2.6	2.8	1.41
3	1.5	1.00	1.18	2.4	2.1	1.7	3.6	2.3	1.8	2.7	2.7	1.45
4	1.43	0.96	1.14	2.3	2.0	1.6	3.6	2.2	1.9	2.4	2.6	1.5
5	1.7	1.02	1.16	2.2	1.9	1.5	3.2	2.2	1.7	2.2	2.5	1.42
6	1.5	0.94	1.18	2.7	2.0	1.44	3.1	2.0	1.7	2.1	2.4	1.5
7	1.42	0.90	1.10	2.5	2.0	2.0	3.0	2.1	1.8	2.0	2.4	1.42
8	1.42	0.98	1.07	2.4	2.0	1.7	3.0	2.1	1.7	1.9	2.4	1.5
9	1.34	1.00	1.04	2.3	1.9	1.7	3.0	2.1	1.6	1.9	2.3	1.5
10	1.34	0.94	1.00	2.4	1.9	1.6	3.0	2.0	1.6	2.8	2.2	1.5
11	1.32	0.93	1.01	2.3	1.8	1.7	2.8	2.0	1.6	2.5	2.1	1.42
12	1.31	0.92	1.04	2.4	1.7	1.7	2.8	1.9	1.6	2.3	2.2	1.36
13	1.28	1.02	1.00	2.7	1.7	1.7	2.7	1.9	1.5	2.3	2.1	1.30
14	1.28	1.15	1.00	2.4	1.7	1.8	3.4	1.9	1.44	2.2	2.0	1.28
15	1.26	1.38	0.96	2.3	1.6	1.9	3.4	1.9	1.8	2.2	1.9	3.0
16	1.23	1.06	1.08	2.2	1.7	1.9	3.2	2.0	3.8	2.2	1.9	2.2
17	1.24	0.92	1.04	2.0	1.7	1.7	3.1	2.1	4.5	2.2	1.8	1.8
18	1.22	1.39	2.9	2.0	1.7	1.6	3.0	2.0	4.1	2.1	1.8	1.6
19	1.22	1.6	2.4	-------	1.8	1.6	2.9	1.9	3.9	2.1	1.7	1.6
20	1.5	1.8	2.2	-------	1.8	1.7	2.8	1.7	3.4	2.0	1.7	1.5
21	1.24	1.7	2.0	-------	1.8	1.6	2.7	1.8	3.2	2.0	1.8	1.42
22	1.26	1.5	1.9	-------	1.7	1.8	3.0	1.7	3.1	2.2	1.8	1.34
23	1.16	1.5	1.8	-------	1.6	1.8	2.8	2.0	3.0	2.1	2.1	2.3
24	1.18	1.5	1.8	-------	1.6	1.9	2.7	2.0	2.9	2.0	2.1	2.1
25	1.16	1.42	1.9	-------	2.2	2.0	2.6	1.8	2.8	2.8	1.8	1.8
26	1.12	1.41	2.4	-------	2.0	2.2	2.5	1.8	2.7	5.2	1.6	1.6
27	1.24	1.38	2.1	1.9	1.9	2.3	2.7	1.8	2.6	4.7	1.5	1.5
28	1.10	1.40	2.0	1.9	1.9	3.4	2.7	1.8	2.6	4.2	1.6	1.44
29	1.12	1.34	2.4	1.7	1.9	4.2	2.6	1.8	2.5	3.7	1.6	1.7
30	1.11	1.26	2.1	1.6	-------	4.5	2.6	1.7	2.4	3.3	1.5	1.7
31	1.06	-------	2.0	1.36	-------	4.4	-------	1.6	-------	3.1	1.5	-------

Daily Discharge, in Second-feet, of Schuylkill River at Schuylkill Haven, Schuylkill County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	125	80	102	215	215	193	1,080	312	118	257	468	103
2	139	77	96	376	262	155	874	284	103	341	402	91
3	125	77	90	316	238	155	714	257	151	371	371	96
4	117	75	87	288	215	139	714	232	169	284	341	103
5	155	78	89	262	193	125	542	232	134	232	312	93
6	125	73	90	409	215	118	504	188	134	209	284	103
7	115	71	84	345	215	215	468	209	151	188	284	93
8	115	76	82	316	215	155	468	209	134	169	284	103
9	106	77	80	288	193	155	468	209	118	169	257	103
10	106	73	77	316	193	139	468	188	118	402	232	103
11	104	73	78	288	173	155	402	188	118	312	209	93
12	103	72	80	316	155	155	402	169	118	257	232	86
13	100	78	77	409	155	155	371	169	103	257	209	79
14	100	88	77	316	155	173	624	169	95	232	188	77
15	98	111	75	288	139	193	624	169	151	232	169	468
16	95	81	83	262	155	193	542	188	816	232	169	232
17	96	72	80	215	155	155	504	209	1,330	232	151	151
18	94	112	480	215	155	139	468	188	1,000	209	151	118
19	94	139	316	††238	173	139	434	169	874	209	134	118
20	125	173	262	††238	173	155	402	134	624	188	134	103
21	96	155	215	††262	173	139	371	151	542	188	151	93
22	98	125	193	††288	155	173	468	134	504	232	151	83
23	89	125	173	††262	139	173	402	188	468	209	209	257
24	90	125	173	††238	139	193	371	188	434	188	209	209
25	89	115	193	††193	262	215	341	151	402	402	151	151
26	86	114	316	††193	215	262	312	151	371	2,160	118	118
27	96	111	238	193	193	288	371	151	341	1,530	103	103
28	84	113	215	193	193	698	371	151	341	1,080	118	95
29	86	106	316	155	193	1,250	341	151	312	763	118	134
30	85	98	238	139	-------	1,560	341	134	284	582	103	134
31	81	-------	215	109	-------	1,440	-------	118	-------	504	103	-------

NOTE.—††Estimated.

Estimated Monthly Discharge of Schuylkill River at Schuylkill Haven, Schuylkill County

(Drainage area, 127 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	155	81	104	0.81	0.93
November	173	71	98	0.77	0.86
December	480	75	160	1.26	1.45
1916					
January	409	109	263	2.07	2.39
February	262	139	186	1.46	1.58
March	1,560	118	308	2.43	2.80
April	1,080	312	492	3.87	4.32
May	312	118	185	1.46	1.68
June	1,330	95	352	2.77	3.09
July	2,160	169	414	3.26	3.76
August	468	103	210	1.65	1.90
September	468	77	130	1.02	1.14
The year	2,160	71	242	1.91	25.90

DELAWARE BASIN—STATION NO. 12

LITTLE SCHUYLKILL RIVER AT TAMAQUA

DESCRIPTION OF STATION

Location.—At three span, stone arch, highway bridge at Broad Street, Tamaqua, Schuylkill County.

Records Available.—Discharge measurements and gage heights from June 23 to September 30, 1916. For other records on this river see Little Schuylkill River at Molino.

Drainage Area.—44 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the upstream side of the bridge and is read twice daily by William P. Griffiths.

Channel.—Section is entirely walled in above and below the bridge, and only overflows during extreme floods, and the bed is rocky and permanent.

Discharge Measurements of Little Schuylkill River at Tamaqua, Schuylkill County

(Drainage area, 44 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
1	June 23	Reckord & Shade	87	2.52	180	Surface & 0.6 method
2	July 15	Boehringer	60	2.19	68	Surface & 0.6 method
3	July 27	Brown	205	4.15	232	Surface method
4	Aug. 31	Brown	55	2.30	86	Surface & 0.6 method

Daily Mean Gage Heights, in feet, of Little Schuylkill River at Tamaqua, Schuylkill County, for the year ending September 30, 1916

Day	June	July	Aug.	Sept.
1	-------	2.24	2.88	2.26
2	-------	2.21	2.79	2.25
3	-------	2.44	2.72	2.20
4	-------	2.24	2.68	2.21
5	-------	2.19	2.65	2.19
6	-------	2.15	2.50	2.19
7	-------	2.12	2.59	2.20
8	-------	2.10	2.55	2.25
9	-------	2.10	2.49	2.21
10	-------	2.49	2.45	2.20
11	-------	2.31	2.42	2.18
12	-------	2.20	2.45	2.19
13	-------	2.18	2.35	2.19
14	-------	2.21	2.32	2.20
15	-------	2.18	2.30	2.98
16	-------	2.15	2.30	2.36
17	-------	2.21	2.30	2.21
18	-------	2.34	2.28	2.20
19	-------	2.20	2.28	2.20
20	-------	2.20	2.25	2.18
21	-------	2.34	2.25	2.18
22	-------	3.32	2.25	2.18
23	2.52	3.00	2.25	2.52
24	2.46	2.82	2.25	2.31
25	2.44	3.10	2.22	2.25
26	2.39	5.15	2.30	2.20
27	2.36	4.10	2.30	2.20
28	2.31	3.55	2.30	2.18
29	2.27	3.25	2.30	2.24
30	2.23	3.08	2.25	2.28
31	-------	2.99	2.28	-------

DELAWARE BASIN—STATION NO. 13

LITTLE SCHUYLKILL RIVER AT MOLINO

DESCRIPTION OF STATION

Location.—At single span, steel, through truss, highway bridge at Molino, Schuylkill County.

Records Available.—Discharge measurements and gage heights from May 7, 1914, to September 30, 1916. For other records on this river see Little Schuylkill River at Tamaqua.

Drainage Area.—132 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the downstream side of the bridge and is read twice daily by Frank A. Schickram.

Channel.—Both banks are low but not subject to overflow, and the bed is culm covered and is not permanent.

Discharge Measurements of Little Schuylkill River at Molino, Schuylkill County

(Drainage area, 132 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
11	Mar. 17	Boehringer	117	1.45	190	0.6 method
12	April 20	Boehringer	219	2.15	444	0.6 method
13	June 22	Reckord & Shade	245	2.44	527	0.6 method
14	July 26	Brown	896	7.36	5,025	Surface method
15	July 27	Brown	624	5.30	2,363	Surface method
16	Aug. 31	Brown	89	0.75	130	0.6 method

Daily Mean Gage Heights, in feet, of Little Schuylkill River at Molino, Schuylkill County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	0.70	0.44	0.78	1.7	1.8	1.4	3.6	1.6	1.1	1.5	2.1	0.63
2	0.86	0.45	0.74	2.2	1.8	1.6	3.4	1.6	1.0	1.4	1.8	0.61
3	0.76	0.49	0.69	2.2	1.7	1.5	3.0	1.6	1.0	3.0	1.7	0.61
4	0.58	0.46	0.75	1.9	1.6	1.4	2.6	1.8	1.3	1.8	1.6	0.55
5	0.85	0.56	0.86	1.9	1.8	1.4	2.6	1.7	1.1	1.6	1.6	0.55
6	0.91	0.50	0.92	2.5	1.6	1.2	2.2	1.6	1.0	1.5	1.5	0.53
7	0.66	0.41	0.79	2.1	1.6	2.0	2.1	1.5	1.1	1.4	1.5	0.53
8	0.64	0.44	0.80	1.9	1.5	1.6	2.0	1.5	1.5	1.2	1.4	0.53
9	0.59	0.46	0.79	1.9	1.6	1.4	2.0	1.5	1.4	1.2	1.3	0.65
10	0.56	0.49	0.82	2.0	1.5	1.4	2.0	1.4	1.3	1.6	1.2	0.51
11	0.54	0.54	0.82	1.8	1.3	1.3	1.9	1.3	1.3	1.7	1.2	0.51
12	0.56	0.56	0.82	1.9	1.3	1.3	1.9	1.2	1.3	1.5	1.3	0.51
13	0.49	0.56	0.98	2.7	1.4	1.3	1.7	1.2	1.2	1.3	1.1	0.45
14	0.56	0.54	0.98	2.2	*1.4	2.1	1.9	1.2	1.2	1.4	1.0	0.45
15	0.63	0.82	0.90	1.9	1.6	1.8	3.2	1.2	1.2	1.2	1.0	0.68
16	0.62	0.70	1.00	1.9	1.6	1.5	2.9	1.2	1.4	1.2	0.98	1.2
17	0.65	0.65	0.86	1.7	1.4	1.4	2.6	1.4	4.0	1.4	0.98	0.71
18	0.60	0.58	†2.5	1.6	1.2	1.4	2.5	1.4	3.5	2.3	0.93	0.61
19	0.62	1.4	2.0	1.7	1.1	1.4	2.3	1.2	3.1	1.7	0.93	0.63
20	0.76	1.5	2.1	1.9	1.2	1.4	2.3	1.3	2.9	1.6	0.88	0.51
21	0.72	1.3	1.8	1.6	1.1	1.4	2.0	1.1	2.5	1.4	0.83	0.48
22	0.55	1.2	1.6	1.9	1.1	1.4	2.4	1.1	2.5	4.1	0.85	0.53
23	0.53	1.0	1.6	1.9	1.2	1.4	2.2	1.4	2.2	2.5	0.81	0.61
24	0.47	1.0	1.5	1.6	1.0	1.4	2.0	1.4	2.0	2.2	0.86	0.73
25	0.52	0.92	1.4	1.5	1.6	1.6	1.9	1.4	1.9	2.9	0.80	0.61
26	0.41	0.96	2.3	1.5	2.2	2.3	1.8	1.3	1.9	‡7.7	0.76	0.68
27	0.66	0.91	1.8	1.6	1.8	2.9	1.8	1.3	1.8	5.5	0.86	0.57
28	0.54	0.95	1.8	1.6	1.7	3.2	1.9	1.2	1.6	4.0	0.78	0.55
29	0.49	0.88	2.0	1.6	1.6	3.9	1.8	1.2	1.5	3.3	0.79	0.55
30	0.48	0.80	1.9	1.7	-------	3.8	1.8	1.3	1.5	2.7	0.65	0.75
31	0.47	-------	1.7	1.6	-------	3.9	-------	1.2	-------	2.3	0.69	-------

NOTES—*River frozen February 14 to 17, 1916, inclusive. †Maximum 3.4 feet at 5:10 p. m. ‡Maximum 8.3 feet at 5:40 a. m.

DELAWARE BASIN—STATION NO. 14

SCHUYLKILL RIVER AT READING

DESCRIPTION OF STATION

Location.—At concrete viaduct at Penn Street, Reading, Berks County.

Records Available.—Discharge complete from May 6, 1914, to September 30, 1915, and discharge measurements and gage heights from October 1, 1915, to September 30, 1916. For other records on this

river see Schuylkill River at Schuylkill Haven and Conshohocken; also Schuylkill River at Fairmount Dam, Philadelphia, in the 1910-11 and 1912 reports of the Water Supply Commission.

Drainage Area.—900 square miles.

Gage.—A standard chain gage, whose elevation of zero is 188.505 feet above mean sea level, is located on the downstream side of the bridge and is read twice daily by C. J. Richards.

Channel.—The right bank is high and not subject to overflow, the left bank is low and liable to overflow, and the bed is composed of gravel.

Remarks.—The Schuylkill Navigation Company Canal runs along the left bank of the river.

Discharge Measurements of Schuylkill River at Reading, Berks County

(Drainage area, 900 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
17	June 8	Boehringer & Wilson	542	0.27	682	0.6 method. 44 second-feet in canal
18	June 22	Reckord & Shade	890	2.08	2,498	Surface method
19	July 26	Wilson	3,743	9.65	17,890	Surface method. Includes canal discharge
20	July 27	Wilson	2,672	6.82	12,366	Surface method. Includes canal discharge
21	July 27	Wilson	1,884	6.12	10,826	Surface method
22	July 27	Wilson	1,806	5.72	9,692	Surface method
23	July 28	Wilson	1,458	4.45	6,924	0.6 method. 81 second-feet in canal
24	Aug. 31	Brown	369	—0.40	336	0.6 method

Daily Mean Gage Heights, in feet, of Schuylkill River at Reading, Berks County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	0.2	—0.35	0.2	1.9	1.3	1.5	4.0	1.7	0.4	0.5	1.9	—0.30
2	0.6	—0.38	0.1	2.0	1.4	1.6	3.5	1.5	0.4	0.5	1.6	—0.34
3	0.4	—0.30	0.0	2.8	1.4	1.2	3.0	1.5	0.4	1.4	1.4	—0.48
4	0.2	—0.30	—0.08	2.8	1.1	1.0	2.6	1.5	0.5	1.3	1.3	—0.50
5	0.1	—0.22	—0.15	2.2	1.3	0.9	2.4	1.3	0.4	1.6	1.2	—0.40
6	0.3	—0.22	—0.18	2.0	1.2	1.0	2.2	1.2	0.3	1.6	1.1	—0.35
7	0.3	—0.32	—0.05	2.5	1.0	1.0	2.0	1.0	0.6	1.6	1.0	—0.41
8	0.2	—0.20	0.0	2.2	0.8	1.0	1.9	1.0	1.1	1.5	0.9	—0.31
9	0.1	—0.20	0.0	1.8	1.0	1.0	2.0	0.8	0.9	1.1	0.8	—0.25
10	0.0	—0.20	—0.15	1.5	1.0	1.0	1.8	0.8	0.7	0.7	0.6	—0.40
11	0.0	—0.18	—0.42	1.6	0.6	1.0	1.6	0.8	0.6	0.6	0.5	—0.45
12	0.0	—0.18	—0.30	1.6	0.8	0.9	1.6	0.6	0.6	0.5	0.5	—0.50
13	0.0	—0.18	—0.32	2.2	1.0	1.0	1.6	0.6	0.5	0.5	0.4	—0.58
14	0.0	—0.45	—0.25	2.3	0.8	1.0	1.7	0.5	0.4	0.4	0.4	—0.55
15	0.0	0.2	—0.45	1.8	0.8	1.6	2.8	0.4	0.5	0.3	0.1	—0.30
16	—0.02	0.5	††—0.25	1.6	0.7	1.2	2.2	0.5	1.0	0.4	—0.10	0.1
17	—0.10	0.1	0.1	1.1	0.9	1.0	2.3	0.8	4.8	0.6	0.0	0.1
18	—0.15	—0.02	†2.6	0.9	1.0	0.9	2.0	0.7	3.8	1.3	0.1	0.2
19	0.2	0.2	3.3	1.0	0.8	0.8	1.6	0.5	3.0	0.9	0.1	0.0
20	1.0	1.6	2.4	0.9	0.5	0.9	1.6	0.4	2.6	0.6	0.1	—0.10
21	0.6	1.0	1.8	1.2	0.4	1.0	1.4	0.3	2.0	0.6	0.0	—0.12
22	0.4	0.9	1.7	1.3	0.4	1.8	2.2	0.4	2.0	2.1	—0.02	0.0
23	0.2	0.8	1.4	1.3	0.6	1.8	2.0	1.0	1.6	1.6	0.2	0.1
24	—0.12	0.6	1.5	1.2	0.6	2.0	1.8	1.4	1.3	1.3	0.1	0.2
25	—0.12	0.4	1.6	1.2	1.2	2.1	1.6	1.0	1.2	2.1	0.0	0.1
26	—0.05	0.4	2.0	1.0	3.0	2.8	1.8	1.2	1.2	‡8.8	0.0	—0.02
27	0.4	0.4	1.6	1.0	2.2	3.4	1.7	1.0	1.0	6.5	0.1	—0.15
28	0.2	0.4	1.5	0.9	1.6	3.7	2.5	1.0	0.9	4.3	0.0	—0.10
29	0.1	0.4	2.0	0.9	1.5	5.3	2.2	0.7	0.8	3.1	—0.06	—0.06
30	—0.12	0.3	2.5	1.0	-------	5.2	2.0	0.5	0.6	2.5	—0.18	0.1
31	—0.22	-------	2.0	1.3	-------	4.7	-------	0.4	-------	2.2	—0.42	-------

NOTES—†Maximum 5.0 feet estimated at 8 p. m. ‡Maximum 10.0 feet estimated at noon. ††Estimated.

DELAWARE BASIN—STATION NO. 15

PERKIOMEN CREEK AT GRATERS FORD

DESCRIPTION OF STATION

Location.—At two span, pony truss, highway bridge at Graters Ford, Montgomery County.

Records Available.—Discharge complete from June 11, 1914, to September 30, 1916. For other records on this creek see Perkiomen Creek at Frederick or Spring Mount, in the 1910-11 and 1912 reports of the Water Supply Commission.

Drainage Area.—280 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the upstream side of the bridge and is read twice daily by I. H. Smoyer.

Channel.—The right bank is high and not subject to overflow, the left bank is of medium height and overflows during extreme stages, and the bed is composed of rock and gravel.

Discharge Measurement of Perkiomen Creek at Graters Ford, Montgomery County

(Drainage area, 280 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
20	June 2	Boehringer & Wilson	284	2.86	73	Surface method

Daily Mean Gage Heights, in feet, of Perkiomen Creek at Graters Ford, Montgomery County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	3.2	3.5	3.6	3.9	3.9	3.8	4.2	3.4	2.98	3.0	3.4	3.6
2	3.5	3.6	3.6	6.3	3.9	3.7	3.9	3.5	2.94	3.1	3.4	3.4
3	3.6	3.5	3.6	4.6	3.8	3.6	3.7	3.3	2.96	3.5	3.3	3.4
4	3.5	3.5	3.6	3.9	4.0	3.6	3.7	3.3	3.1	3.5	3.2	3.3
5	3.5	3.5	3.6	3.8	3.8	3.5	3.7	3.4	3.1	3.2	3.3	2.84
6	3.7	3.6	3.6	4.4	3.7	3.8	3.6	3.6	3.1	3.2	3.2	3.0
7	3.6	3.6	3.6	3.8	4.0	3.1	3.6	3.4	3.3	3.1	3.2	2.92
8	3.6	3.5	3.5	3.7	4.2	3.6	3.6	3.4	3.9	3.1	3.2	2.68
9	3.6	3.5	3.3	*	3.7	3.6	4.0	3.3	3.5	3.0	3.3	3.1
10	3.6	3.4	*	-------	3.6	3.4	4.6	3.2	3.3	3.1	3.2	3.4
11	3.5	3.5	-------	-------	3.5	3.3	4.2	3.2	3.3	3.2	3.1	3.2
12	3.5	3.3	-------	-------	3.5	3.6	3.9	3.2	3.3	3.1	3.2	3.2
13	3.2	3.3	-------	-------	3.9	3.8	3.7	3.2	3.2	3.1	3.2	3.1
14	3.1	3.4	-------	-------	*	4.2	§4.8	3.2	3.0	3.3	2.94	2.87
15	3.6	3.8	-------	-------	-------	4.1	4.2	3.1	3.1	3.2	2.98	3.3
16	3.7	3.9	-------	-------	-------	4.1	3.8	3.2	3.5	3.2	2.92	4.0
17	3.6	3.7	-------	-------	-------	3.9	3.7	3.2	5.0	3.1	3.0	3.6
18	3.6	3.7	†	-------	-------	3.6	3.6	3.2	3.8	3.0	3.2	3.5
19	3.6	4.0	5.3	-------	-------	3.6	3.5	3.1	3.5	3.0	3.3	3.5
20	3.7	4.6	4.2	-------	-------	3.5	3.5	3.1	3.6	3.0	3.5	3.3
21	4.0	4.2	3.9	-------	-------	3.5	3.5	3.2	3.4	3.1	3.4	3.2
22	3.7	3.8	4.4	-------	-------	4.6	3.7	3.0	3.3	5.1	3.4	3.2
23	3.6	3.7	3.6	-------	-------	4.5	3.7	3.3	3.3	3.7	3.3	3.2
24	3.6	3.7	3.6	3.6	-------	4.2	3.6	3.4	3.2	3.4	3.1	3.6
25	3.5	3.7	3.6	3.5	‡	4.0	3.5	3.2	3.2	¶6.1	3.1	3.3
26	3.7	3.7	6.0	3.5	5.9	4.6	3.6	3.7	3.3	8.0	3.0	3.5
27	3.6	3.7	4.4	3.7	4.5	4.6	3.6	3.4	3.2	5.7	3.4	3.6
28	3.6	3.7	4.1	3.8	4.2	5.6	3.8	3.4	3.2	4.4	3.3	3.3
29	3.6	3.6	6.2	3.6	4.0	6.8	3.6	3.3	3.1	3.9	3.6	2.96
30	3.6	3.6	4.8	3.7	-------	4.9	3.5	3.2	3.1	3.7	3.5	3.2
31	3.6	-------	4.1	4.0	-------	4.4	-------	3.1	-------	3.5	3.5	-------

NOTES—*Creek frozen December 10 to 18, 1915; January 9 to 23 and February 14 to 2 p. m. February 25, 1916, inclusive. †Maximum 9.5 feet at 5 p. m. ‡Maximum 7.5 feet at 7 p. m. §Maximum 5.8 feet at 4:55 p. m. ¶Maximum 8.8 feet.

Daily Discharge, in Second-feet, of Perkiomen Creek at Graters Ford, Montgomery County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	185	350	410	620	620	545	860	290	103	110	290	410
2	350	410	410	3,380	620	475	620	350	89	145	290	290
3	410	350	410	1,250	545	410	475	235	90	350	235	290
4	350	350	410	620	700	410	475	235	145	350	185	235
5	350	350	410	545	545	350	475	290	145	185	235	61
6	475	410	410	1,050	475	545	410	410	145	185	185	110
7	410	410	410	545	700	145	410	290	235	145	185	82
8	410	350	350	475	860	410	410	290	620	145	185	36
9	410	350	235	*235	475	410	700	235	350	110	235	145
10	410	290	*55	280	410	290	1,250	185	235	145	185	290
11	350	350	45	185	350	235	860	185	235	185	145	185
12	350	235	38	175	350	410	620	185	235	145	185	185
13	185	235	30	220	620	545	475	185	185	145	185	145
14	145	290	30	185	*350	860	§1,470	185	110	235	89	68
15	410	545	30	160	170	780	860	145	145	185	103	235
16	475	620	35	140	125	780	545	185	350	185	92	700
17	410	475	65	110	125	620	475	185	1,690	145	110	410
18	410	475	†2,500	85	150	410	410	185	545	110	185	350
19	410	700	2,050	70	140	410	350	145	350	110	235	350
20	475	1,250	860	100	100	350	350	145	410	110	350	235
21	700	860	620	75	75	350	350	185	290	145	290	185
22	475	545	1,050	125	70	1,250	475	110	235	1,810	290	185
23	410	475	410	300	75	1,150	475	235	235	475	235	185
24	410	475	410	410	140	860	410	290	185	290	145	410
25	350	475	410	350	‡1,800	700	350	235	185	¶3,100	145	235
26	475	475	2,960	350	2,820	1,250	410	475	235	5,940	110	350
27	410	475	1,050	475	1,150	1,250	410	290	185	2,560	290	410
28	410	475	780	545	860	2,430	545	290	185	1,050	235	235
29	410	410	3,240	410	700	4,100	410	235	145	620	410	96
30	410	410	1,470	475	-------	1,580	350	185	145	475	350	185
31	410	-------	780	700	-------	1,050	-------	145	-------	350	350	-------

NOTES—*Creek frozen December 10 to 18, 1915; January 9 to 23 and February 14 to 2 p. m. February 25, 1916, inclusive, and discharge estimated from climatological data. †Maximum=8,380 second-feet. ‡Maximum=5,150 second-feet. §Maximum=2,690 second-feet. ¶Maximum=7,220 second-feet. Discharge above 7,550 second-feet is estimated.

Estimated Monthly Discharge of Perkiomen Creek at Graters Ford, Montgomery County

(Drainage area, 280 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	700	145	395	1.41	1.63
November	1,250	235	462	1.65	1.84
December	††8,380	-------	722	2.58	2.97
1916					
January	3,380	-------	472	1.69	1.95
February	5,150	-------	556	1.99	2.15
March	4,100	235	818	2.92	3.37
April	2,690	350	556	1.99	2.22
May	475	110	233	0.83	0.96
June	1,690	89	281	1.00	1.12
July	7,220	110	653	2.33	2.69
August	410	82	217	0.78	0.90
September	700	36	243	0.87	0.97
The year	††8,380	36	468	1.67	22.77

NOTES—Creek frozen December 10 to 18, 1915; January 9 to 23 and February 14 to 2 p. m. February 25, 1916, inclusive, and discharge estimated from climatological data. ††Estimated.

DELAWARE BASIN—STATION NO. 16

SCHUYLKILL RIVER AT CONSHOHOCKEN

DESCRIPTION OF STATION

Location.—At five span, steel, through truss, highway bridge known as "Matson's Ford Bridge" between East and West Conshohocken, Montgomery County.

Records Available.—Discharge complete from June 8, 1914, to May 31, 1916. For other records on this river see Schuylkill River at Schuylkill Haven and Reading; also Schuylkill River at Fairmount Dam, Philadelphia, in the 1910-11 and 1912 reports of the Water Supply Commission.

Drainage Area.—1,795 square miles.

Gage.—A standard chain gage, whose elevation of zero was 34.83 feet above mean sea level, was located on the downstream side of the bridge and was read twice daily by O. R. Tomlinson.

Channel.—Both banks are high and not subject to overflow, and the bed is rocky, with some vegetable growth.

Remarks.—The Schuylkill Navigation Company Canal follows the left bank a short distance from the river. Station discontinued May 31, 1916.

Daily Mean Gage Heights, in feet, of Schuylkill River at Conshohocken, Montgomery County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May
1	3.3	3.2	3.1	5.6	4.8	5.1	8.6	5.0
2	3.4	3.1	3.1	6.9	5.0	4.9	7.9	4.9
3	3.9	3.3	3.4	7.3	5.1	4.9	7.1	5.0
4	3.5	3.2	3.4	6.1	4.7	4.5	6.2	5.2
5	3.4	3.2	3.3	5.8	4.5	4.3	5.9	4.9
6	3.4	3.1	-------	5.9	4.5	3.9	5.7	4.7
7	3.4	3.4	-------	6.1	4.7	3.9	5.4	4.5
8	3.5	3.8	-------	5.6	4.8	4.2	5.4	4.5
9	3.5	3.2	-------	5.1	4.7	3.5	5.6	4.3
10	3.3	3.3	-------	4.7	4.5	4.5	5.5	3.9
11	2.9	3.4	-------	4.9	4.3	4.6	5.4	3.8
12	3.0	2.8	-------	5.1	4.4	4.6	5.3	3.7
13	3.5	3.4	-------	5.5	4.5	4.8	5.3	3.5
14	3.4	3.7	-------	6.0	4.6	5.9	5.7	3.4
15	3.8	3.9	-------	5.1	4.2	5.7	5.8	3.4
16	3.6	3.9	3.2	5.0	3.8	5.9	5.6	3.4
17	3.3	3.6	4.0	4.6	4.1	6.5	5.8	3.6
18	3.3	3.6	7.8	4.5	4.3	6.2	5.6	4.0
19	3.5	3.8	†9.7	4.0	4.3	5.8	5.5	3.7
20	3.5	5.3	7.5	3.8	4.3	5.0	5.4	3.4
21	4.1	4.5	5.6	3.9	4.4	4.6	5.4	3.3
22	4.0	4.4	5.3	4.1	3.3	6.3	5.5	3.7
23	3.7	4.2	5.1	5.0	3.9	6.7	5.4	4.4
24	3.7	3.6	4.5	4.8	4.1	6.9	5.3	4.7
25	3.5	3.6	4.2	4.4	5.9	6.8	5.3	4.5
26	3.4	3.7	6.0	4.3	8.9	6.9	5.4	4.6
27	3.5	3.8	6.7	4.3	7.5	7.2	5.2	4.4
28	3.6	3.8	5.3	4.3	6.2	8.8	5.3	4.3
29	3.9	3.8	7.1	4.2	5.4	11.6	5.2	4.3
30	3.4	3.5	7.7	4.5	-------	9.9	5.1	3.9
31	3.3	-------	6.0	5.0	-------	9.1	-------	††3.5

NOTES—†Maximum 11.2 feet at 7.25 a. m. ††Estimated. Station discontinued May 31, 1916.

Daily Discharge, in Second-feet, of Schuylkill River at Conshohocken, Montgomery County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May
1	1,230	1,140	1,060	4,450	2,940	3,450	11,600	3,320
2	1,320	1,060	1,060	7,460	3,270	3,100	9,900	3,150
3	1,840	1,230	1,320	8,440	3,450	3,100	7,940	3,320
4	1,420	1,140	1,320	5,560	2,790	2,520	5,790	3,690
5	1,320	1,140	1,230	4,880	2,520	2,260	5,110	3,150
6	1,320	1,060	††1,140	5,110	2,520	1,790	4,660	2,840
7	1,320	1,320	††1,100	5,560	2,790	1,790	4,040	2,560
8	1,420	1,730	††1,100	4,450	2,940	2,140	4,040	2,560
9	1,420	1,140	††1,100	3,450	2,790	1,360	4,450	2,310
10	1,230	1,230	††1,100	2,790	2,520	2,520	4,240	1,840
11	900	1,320	††1,100	3,100	2,260	2,650	4,040	1,730
12	980	825	††1,100	3,450	2,380	2,650	3,840	1,620
13	1,420	1,320	††1,100	4,240	2,520	2,940	3,840	1,420
14	1,320	1,620	††1,100	5,340	2,650	5,110	4,660	1,320
15	1,730	1,840	††1,100	3,450	2,140	4,660	4,880	1,320
16	1,520	1,840	1,100	3,270	1,680	5,110	4,450	1,320
17	1,230	1,520	1,900	2,650	2,020	6,480	4,880	1,520
18	1,230	1,520	9,660	2,520	2,260	5,790	4,450	1,960
19	1,420	1,730	†14,400	1,900	2,260	4,880	4,240	1,620
20	1,420	3,880	8,920	1,680	2,260	3,270	4,040	1,320
21	2,070	2,560	4,450	1,790	2,380	2,650	4,040	1,230
22	1,960	2,440	3,840	2,020	1,180	6,020	4,240	1,620
23	1,620	2,190	3,450	3,270	1,790	6,960	4,040	2,440
24	1,620	1,520	2,520	2,940	2,020	7,460	3,840	2,840
25	1,420	1,520	2,140	2,380	5,110	7,210	3,840	2,560
26	1,320	1,620	5,340	2,260	12,400	7,460	4,040	2,700
27	1,420	1,730	6,960	2,260	8,920	8,190	3,640	2,440
28	1,520	1,730	3,840	2,260	5,790	12,100	3,840	2,310
29	1,840	1,730	7,940	2,140	4,040	20,100	3,640	2,310
30	1,320	1,420	9,420	2,520	--------	14,900	3,450	1,840
31	1,230	--------	5,340	3,270	--------	12,900	--------	1,420

NOTES—†Maximum=18,700 second-feet. October 1 to December 6, 1915, and May 1 to May 31, 1916, inclusive, 50 second-feet added to daily discharge for canal. ††Estimated. Station discontinued May 31, 1916.

Estimated Monthly Discharge of Schuylkill River at Conshohocken, Montgomery County

(Drainage area, 1,795 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	2,070	900	1,430	0.80	0.92
November	3,880	825	1,600	0.89	0.99
December	18,700	1,060	3,490	1.94	2.24
1916					
January	8,440	1,680	3,580	1.99	2.29
February	12,400	1,180	3,260	1.82	1.96
March	20,100	1,360	5,600	3.12	3.60
April	11,600	3,450	4,790	2.67	2.98
May	3,690	1,230	2,180	1.21	1.40

NOTE—October 1 to December 6, 1915, and May 1 to 31, 1916, inclusive, 50 second-feet added to daily discharge for canal. Station discontinued May 31, 1916.

DELAWARE BASIN—STATION NO. 17

DARBY CREEK AT LANSDOWNE

DESCRIPTION OF STATION

Location.—At single span, iron, highway bridge on road from Lansdowne to Upper Darby Township, Delaware County.

Records Available.—Discharge complete from July 31, 1911, to February 24, 1916, and discharge measurements to April 27, 1916.

Drainage Area.—35 square miles.

Gage.—A 10-foot staff gage, whose elevation of zero was arbitrary, was located on a tree on the west bank of the creek about one quarter mile above the highway bridge, near Pennock's greenhouses. There was also a high water staff gage, graduated above 5 feet, located on a tree a short distance from the low water gage referred to same datum as low water gage. The gages were read twice daily by Belfiore Di Cecco.

Channel.—The right bank is sloping and does not overflow, the left bank is high and steep and not subject to overflow, and the bed is composed of mud, gravel and stones.

Remarks.—Slackwater from dam of Garrett Paper Mill extends to a point 75 to 80 yards below the gage. Station discontinued February 24, 1916.

Discharge Measurements of Darby Creek at Lansdowne, Delaware County

(Drainage area, 35 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
19	Mar. 4	Russel & Pardoe	70	1.53	56	Wading gage 100 feet below
20	April 4	University of Pa.	70	1.48	51	Wading gage 100 feet below
21	April 6	University of Pa.	72	1.51	55	Wading gage 100 feet below
22	April 11	University of Pa.	82	1.70	85	Wading gage 100 feet below
23	April 13	University of Pa.	79	1.64	64	Wading gage 100 feet below
24	April 27	University of Pa.	73	1.59	67	Wading gage 100 feet below

Daily Mean Gage Heights, in feet, of Darby Creek at Lansdowne, Delaware County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.
1	1.4	1.2	1.00	1.6	1.3
2	1.4	1.4	1.2	1.9	1.5
3	1.5	1.3	1.3	1.7	1.4
4	1.5	1.3	0.95	1.4	1.4
5	1.6	1.3	1.4	1.6	1.4
6	1.6	1.3	1.2	1.6	1.5
7	1.6	1.5	1.2	1.6	1.5
8	1.4	1.4	1.4	1.5	1.3
9	1.00	1.2	1.10	1.6	1.2
10	1.5	1.3	*	1.7	1.2
11	0.98	1.3	-------	1.6	1.2
12	1.00	1.3	-------	1.6	1.10
13	1.10	1.3	-------	1.7	1.7
14	1.3	1.5	-------	*	1.2
15	1.4	1.6	-------	-------	1.5
16	1.2	1.3	-------	-------	1.4
17	1.4	1.2	1.05	-------	1.6
18	1.3	1.3	†3.0	-------	1.4
19	1.4	1.7	1.6	-------	1.4
20	1.3	1.4	1.4	-------	1.6
21	1.3	1.5	1.4	-------	1.7
22	1.3	1.4	1.4	1.5	1.3
23	1.3	1.3	1.2	1.5	1.8
24	1.4	1.3	1.4	1.4	1.5
25	1.5	1.4	1.5	1.2	-------
26	1.3	1.4	1.9	1.4	-------
27	1.5	1.3	1.6	1.3	-------
28	1.4	1.5	1.6	1.3	-------
29	1.4	1.4	2.5	1.2	-------
30	1.2	1.4	1.8	1.4	-------
31	1.5	-------	1.6	1.4	-------

NOTES—*Creek frozen December 10 to 16, 1915, and January 14 to 21, 1916, inclusive. †Maximum 4.0 feet. Station discontinued February 24, 1916.

Daily Discharge, in Second-feet, of Darby Creek at Lansdowne, Delaware County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.
1	51	33	22	75	41
2	51	51	33	125	63
3	63	41	41	89	51
4	63	41	20	51	51
5	75	41	51	75	51
6	75	41	33	75	63
7	75	63	33	75	63
8	51	51	51	63	41
9	22	33	27	75	33
10	63	41	*12	89	33
11	21	41	11	75	33
12	22	41	10	75	27
13	27	41	10	89	89
14	41	63	10	*35	33
15	51	75	12	32	63
16	33	41	51	29	51
17	51	33	24	26	75
18	41	41	†422	23	51
19	51	89	75	20	51
20	41	51	51	17	75
21	41	63	51	25	89
22	41	51	51	63	41
23	41	41	33	63	105
24	51	41	51	51	63
25	63	51	63	33	-------
26	41	51	125	51	-------
27	63	41	75	41	-------
28	51	63	75	41	-------
29	51	51	276	33	-------
30	33	51	105	51	-------
31	63	-------	75	51	-------

NOTES—*Creek frozen December 10 to 16, 1915, and January 14 to 21, 1916, inclusive, and discharge estimated from climatological data. †Maximum=746 second-feet. Station discontinued February 24, 1916.

Estimated Monthly Discharge of Darby Creek at Lansdowne, Delaware County

(Drainage area, 35 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	75	21	49	1.40	1.61
November	89	33	49	1.40	1.56
December	746		64	1.83	2.11
1916					
January	125		55	1.57	1.81

NOTES.—Creek frozen December 10 to 16, 1915, and January 14 to 21, 1916, inclusive, and discharge estimated from climatological data. Station discontinued February 24, 1916.

DELAWARE BASIN—STATION NO. 18

BRANDYWINE CREEK AT CHADDS FORD

DESCRIPTION OF STATION

Location.—At two span, iron girder bridge of Pennsylvania Railroad at Chadds Ford, Delaware County.

Records Available.—Discharge complete from August 1, 1911, to September 30, 1916.

Drainage Area.—285 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the upstream side of the bridge and is read twice daily by E. J. Reynolds.

Channel.—The natural right bank of the creek is low and flat but flood bank is high and steep, the left bank is high and steep, and the bed is composed of mud, stones and gravel.

Discharge Measurement of Brandywine Creek at Chadds Ford, Delaware County

(Drainage area, 285 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
22	June 20	Reckord & Shade	371	2.18	530	0.6 method

Daily Mean Gage Heights, in feet, of Brandywine Creek at Chadds Ford, Delaware County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	1.40	1.22	1.18	1.7	1.7	1.7	2.2	1.8	1.42	1.41	1.8	1.26
2	1.5	1.22	1.16	3.2	1.9	1.7	2.1	1.7	1.35	1.39	1.7	1.22
3	1.38	1.20	1.16	2.4	1.8	1.7	2.0	1.7	1.33	1.38	1.7	1.20
4	1.38	1.20	1.12	1.7	1.5	1.5	2.0	1.6	1.34	1.36	1.6	1.16
5	1.44	1.20	1.10	1.7	1.6	1.6	1.9	2.1	1.30	1.34	1.6	1.15
6	1.48	1.20	1.09	1.9	1.6	1.6	1.9	2.0	1.30	1.32	1.6	1.13
7	1.43	1.20	1.12	1.8	1.9	1.6	1.9	1.7	1.9	1.31	1.6	1.10
8	1.5	1.19	1.14	1.5	1.6	1.7	1.9	1.9	2.0	1.30	1.5	1.18
9	1.44	1.16	1.16	1.41	1.6	1.6	2.2	1.8	1.6	1.26	1.49	1.36
10	1.38	1.14	1.18	1.6	1.5	1.6	2.8	1.6	1.5	1.7	1.48	1.32
11	1.31	1.12	1.16	1.8	1.5	1.6	3.0	1.6	1.5	1.9	1.46	1.24
12	1.26	1.14	1.16	1.8	1.6	1.8	2.4	1.5	1.6	1.7	1.9	1.18
13	1.26	1.18	1.17	1.9	2.2	1.7	2.1	1.48	1.6	1.38	1.6	1.15
14	1.29	1.18	1.18	2.0	1.9	2.0	2.1	1.5	1.42	4.8	1.5	1.10
15	1.42	1.6	1.32	1.7	1.8	2.1	2.3	1.5	1.36	2.3	1.44	1.46
16	1.49	1.40	1.5	1.47	1.6	1.6	2.0	1.7	2.7	1.7	1.42	1.5
17	1.35	1.34	1.26	1.48	1.6	1.5	1.9	1.8	¶5.0	1.6	1.40	1.32
18	1.32	1.32	2.6	1.9	1.8	1.6	2.0	1.6	2.5	1.5	1.38	1.27
19	1.31	1.9	2.6	1.6	2.0	1.5	1.8	1.5	1.9	1.48	1.38	1.44
20	1.39	2.0	1.6	1.47	1.7	1.5	1.8	1.47	2.1	1.44	1.36	1.36
21	1.5	1.48	1.41	1.46	1.42	1.6	1.8	1.40	1.9	1.39	1.34	1.20
22	1.38	1.37	1.28	1.6	1.38	§4.2	1.8	1.43	1.9	1.8	1.39	1.27
23	1.30	1.29	1.20	1.8	1.7	3.1	1.9	2.7	1.7	3.5	1.34	1.26
24	1.25	1.31	1.19	1.6	1.5	2.2	1.8	2.2	1.6	1.8	1.31	1.26
25	1.24	1.26	1.18	1.43	‡3.8	1.9	1.8	1.8	1.9	3.2	1.26	1.24
26	1.24	1.26	2.6	1.5	3.4	2.1	1.9	2.1	1.7	5.8	1.24	1.24
27	1.29	1.20	1.8	1.5	2.1	2.1	2.1	1.7	1.5	3.3	1.23	1.24
28	1.28	1.17	1.48	1.5	2.1	2.7	2.1	1.5	1.48	3.4	1.26	1.22
29	1.26	1.17	†3.9	1.48	1.8	5.0	1.9	1.5	1.44	2.4	1.30	1.28
30	1.26	1.18	2.5	1.48	-------	3.1	1.8	1.6	1.44	2.0	1.27	1.5
31	1.25	-------	1.8	1.7	-------	2.6	-------	1.5	-------	1.9	1.26	-------

NOTES.—†Maximum 5.5 feet at 4 p. m. ‡Maximum 4.9 feet at 4 p. m. §Maximum 6.3 feet at 4 p. m. ¶Maximum 5.9 feet at 8 a. m.

Daily Discharge, in Second-feet, of Brandywine Creek at Chadds Ford, Delaware County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	236	189	179	328	328	328	522	364	242	239	364	200
2	264	189	174	1,000	402	328	482	328	223	233	328	189
3	231	184	174	612	364	328	442	328	218	231	328	184
4	231	184	165	328	264	264	442	294	220	226	294	174
5	247	184	160	328	294	294	402	482	210	220	294	172
6	258	184	158	402	294	294	402	442	210	215	294	167
7	244	184	165	364	402	294	402	328	402	213	294	160
8	264	182	170	264	294	328	402	402	442	210	264	179
9	247	174	174	239	294	294	522	364	294	200	261	226
10	231	170	179	294	264	294	804	294	264	328	258	215
11	213	165	174	364	264	294	900	294	264	402	253	194
12	200	170	174	364	294	364	612	264	294	328	402	179
13	200	179	177	402	522	328	482	258	294	231	294	172
14	207	179	179	442	402	442	482	264	242	2,080	264	160
15	242	294	215	328	364	482	567	264	226	567	247	253
16	261	236	264	256	294	294	442	328	756	328	242	264
17	223	220	200	258	294	264	402	364	¶2,200	294	236	215
18	215	215	708	402	364	294	442	294	630	264	231	202
19	213	402	708	294	442	264	364	264	402	258	231	247
20	233	442	294	256	328	264	364	256	482	247	226	226
21	264	268	239	253	242	294	364	236	402	233	220	184
22	231	228	205	294	231	§1,640	364	244	402	364	233	202
23	210	207	184	364	328	950	402	756	328	1,180	220	200
24	197	213	182	294	264	522	364	522	294	364	213	200
25	194	200	179	244	‡1,380	402	364	364	402	1,000	200	194
26	194	200	708	264	1,120	482	402	482	328	2,850	194	194
27	207	184	364	264	482	482	482	328	264	1,060	192	194
28	205	177	258	264	482	756	482	264	258	1,120	200	189
29	200	177	†1,440	258	364	2,200	402	264	247	612	210	205
30	200	179	630	258	-------	950	364	294	247	442	202	264
31	197	-------	364	328	-------	708	-------	264	-------	402	200	-------

NOTES.—†Maximum=2,600 second-feet. ‡Maximum=2,130 second-feet. §Maximum=3,340 second-feet. ¶Maximum=2,940 second-feet.

Estimated Monthly Discharge of Brandywine Creek at Chadds Ford, Delaware County

(Drainage area, 285 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	264	194	224	0.79	0.91
November	442	165	212	0.74	0.83
December	2,600	158	309	1.08	1.24
1916					
January	1,000	239	342	1.20	1.38
February	2,130	231	402	1.41	1.52
March	3,340	264	507	1.78	2.05
April	900	364	462	1.62	1.81
May	756	236	339	1.19	1.37
June	2,940	210	391	1.37	1.53
July	2,850	200	546	1.92	2.21
August	402	192	254	0.89	1.03
September	264	160	200	0.70	0.78
The year	3,340	158	349	1.22	16.66

SUSQUEHANNA BASIN

NORTH BRANCH SUSQUEHANNA RIVER AT BINGHAMTON, N. Y.

DESCRIPTION OF STATION

Location.—At four span, steel, through truss, highway bridge at Washington Street, Binghamton, N. Y.

Records Available.—Discharge complete from July 31, 1901, to December 31, 1912, and gage heights from January 23, 1915, to September 30, 1916. For other records on this river see North Branch Susquehanna River at Towanda, North Branch Susquehanna River at Wilkes-Barre and North Branch Susquehanna River at Danville.

Drainage Area.—2,400 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the upstream side of the bridge and is read twice daily by Fred T. Meade.

Channel.—Both banks are high and not subject to overflow, except in extreme stages, and the bed is composed of gravel and small stones.

Daily Mean Gage Heights, in feet, of North Branch Susquehanna River at Binghamton, Broome County, N. Y., for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	2.7	3.0	3.1	4.8	7.2	4.1	15.5	4.5	3.2	2.7	2.6	2.3
2	2.8	3.1	3.1	4.9	6.8	3.8	16.4	4.2	3.1	2.6	2.5	2.3
3	3.3	3.0	3.0	8.1	5.6	3.7	15.1	3.2	3.2	2.5	2.4	2.2
4	3.4	3.0	3.0	7.3	4.7	3.6	12.4	4.0	3.4	2.6	2.4	2.2
5	3.2	3.0	3.0	6.1	4.4	3.6	10.2	4.0	3.8	2.7	2.4	2.1
6	4.4	3.0	2.9	8.3	4.4	3.6	9.6	3.8	3.4	2.7	2.3	2.2
7	4.2	3.0	2.8	8.5	4.2	3.3	9.2	3.8	3.3	2.6	2.2	2.2
8	3.7	3.0	2.8	6.5	3.8	3.1	8.0	3.7	3.5	2.5	2.2	2.2
9	3.4	3.0	2.7	5.7	3.4	3.2	7.1	3.7	3.5	2.6	2.2	2.2
10	3.3	3.0	2.6	4.6	3.4	3.1	6.8	3.8	3.5	2.7	2.2	2.2
11	3.2	3.0	2.6	4.5	3.3	3.4	6.6	3.6	3.6	2.9	2.2	2.2
12	3.0	3.0	2.5	4.6	3.2	3.3	7.2	3.4	3.8	2.9	2.2	2.2
13	3.0	3.0	2.5	4.3	3.1	3.0	8.2	3.2	3.6	2.6	2.2	2.2
14	3.0	3.1	2.5	4.7	3.2	3.2	9.1	3.2	3.2	4.4	2.2	2.2
15	3.6	3.2	2.5	4.3	3.1	2.8	9.6	3.0	3.0	3.8	2.2	2.2
16	5.6	3.4	2.5	3.6	3.1	3.0	8.3	2.8	3.2	3.4	2.2	2.2
17	4.8	3.5	2.5	4.6	3.2	3.0	7.7	3.2	4.4	3.1	2.2	2.4
18	3.8	3.6	2.9	5.1	3.3	3.1	7.3	5.2	4.2	2.8	2.2	2.7
19	3.6	3.6	4.0	4.8	3.2	3.1	6.6	5.8	3.4	2.8	2.2	2.5
20	4.2	3.8	5.7	4.6	3.1	3.2	6.1	4.6	3.9	2.8	2.2	2.4
21	4.2	3.8	4.8	4.5	3.0	2.9	6.2	4.3	3.8	2.7	2.1	2.3
22	3.8	3.8	4.2	5.4	2.9	2.7	7.6	3.8	3.6	2.7	2.1	2.3
23	3.4	3.7	**4.0	8.3	2.8	2.7	7.3	4.0	3.2	2.6	2.1	2.5
24	3.3	3.6	3.8	7.6	2.6	2.9	6.8	3.8	3.1	2.6	2.1	3.2
25	3.2	3.6	3.8	6.5	2.4	2.7	6.3	4.3	3.0	2.9	2.0	3.8
26	3.2	3.5	6.8	6.6	4.5	3.0	6.1	3.8	2.9	3.0	2.2	3.1
27	3.1	3.4	7.9	7.4	4.8	3.6	5.9	3.6	2.8	2.8	2.2	2.8
28	3.2	3.3	6.9	8.8	4.6	5.5	6.2	3.6	2.8	3.0	2.1	2.7
29	3.2	3.2	6.0	8.0	4.4	8.4	5.2	3.8	2.8	2.8	2.1	2.6
30	3.2	3.2	5.0	6.6	-------	11.2	4.8	3.9	2.8	2.8	2.2	3.3
31	3.1	-------	4.6	5.8	-------	13.9	-------	3.4	-------	2.7	2.3	-------

NOTE.—**Observer sick December 23, 1915, to January 16, 1916, and gage heights copied from records of U. S. Weather Bureau.

SUSQUEHANNA BASIN—STATION NO. 2

NORTH BRANCH SUSQUEHANNA RIVER AT TOWANDA

DESCRIPTION OF STATION

Location.—At four span, steel, through truss, highway bridge at Towanda, Bradford County.

Records Available.—Discharge measurements and gage heights from January 29, 1914, to September 30, 1916. For other records on this river see North Branch Susquehanna River at Binghamton, N. Y., North Branch Susquehanna River at Wilkes-Barre and North Branch Susquehanna River at Danville.

Drainage Area.—7,770 square miles.

Gage.—A standard chain gage, whose elevation of zero is 693.4 feet above mean sea level, is located on the downstream side of the bridge and is read twice daily by Hiram E. Bull.

Channel.—Both banks are high and not subject to overflow, and the bed is composed of rock and gravel.

Remarks.—The U. S. Weather Bureau has observed gage heights at this station since October 1, 1892.

Discharge Measurements of North Branch Susquehanna River at Towanda, Bradford County

(Drainage area, 7,770 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1915		Sq. ft.	Feet	Sec.-ft.	
13	Oct. 7	Bowen & Taylor	7,210	4.31	15,868	0.6 method
	1916					
14	July 12	Brown & Heagy	5,542	1.97	4,281	0.6 method

Daily Mean Gage Heights, in feet, of North Branch Susquehanna River at Towanda, Bradford County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	1.8	2.5	2.6	3.7	6.1	4.8	17.8	4.8	3.1	2.7	1.4	0.88
2	2.2	2.4	2.6	4.6	6.6	4.5	18.0	4.3	2.8	2.4	1.3	0.88
3	3.2	2.3	2.3	9.7	5.2	4.3	15.5	3.9	4.3	2.2	1.2	0.78
4	3.2	2.3	2.3	7.5	4.2	3.9	13.3	3.8	7.5	2.2	1.1	0.68
5	3.0	2.2	2.3	6.3	3.6	3.9	10.8	3.8	5.1	2.3	1.1	0.70
6	4.4	2.3	2.2	9.4	3.7	3.6	9.3	3.8	4.1	2.3	1.1	1.4
7	4.2	2.5	2.1	8.4	3.4	3.8	8.5	3.5	3.6	2.1	1.0	1.0
8	3.6	2.4	2.0	6.6	2.9	3.8	7.7	3.5	5.1	2.0	0.96	1.0
9	3.2	2.3	2.0	4.9	2.9	3.7	7.1	3.7	5.0	1.8	0.98	0.96
10	2.9	2.2	1.9	4.3	2.7	3.8	6.6	3.5	4.6	1.8	0.93	0.96
11	2.8	2.2	1.6	4.2	2.7	3.7	6.3	3.3	4.3	2.0	0.88	1.1
12	2.6	2.3	1.4	4.1	2.8	3.5	6.8	3.0	5.4	2.0	0.88	0.96
13	2.6	2.1	*2.9	4.0	2.9	3.6	8.4	2.7	4.7	1.9	0.88	0.88
14	2.3	2.1	3.4	4.1	*4.0	3.5	10.7	2.6	4.0	2.7	0.93	0.80
15	2.5	2.1	3.0	3.5	4.4	3.3	12.3	2.5	3.5	2.8	0.93	0.93
16	5.4	2.4	3.3	3.1	4.4	3.2	9.3	2.4	4.3	2.9	0.90	1.3
17	4.6	2.9	3.1	2.9	4.6	3.3	7.6	5.2	9.0	2.4	0.87	1.6
18	3.6	2.7	3.5	*4.6	4.6	3.2	6.9	7.3	†11.5	2.1	0.83	1.7
19	3.4	2.7	5.9	4.3	4.0	3.3	6.3	6.2	6.3	1.9	0.81	1.5
20	5.3	3.5	5.8	4.3	3.9	3.4	6.2	5.0	6.5	1.9	0.78	1.2
21	4.5	3.9	5.0	4.5	3.9	3.3	5.2	4.2	5.2	1.8	0.75	1.1
22	4.1	3.7	4.4	4.9	4.0	3.3	7.0	3.8	4.7	1.9	0.68	1.1
23	3.5	3.5	4.0	6.0	4.1	3.0	10.6	4.4	4.1	1.8	0.73	1.2
24	3.2	3.4	3.7	6.7	4.0	3.2	8.8	5.1	3.7	1.7	0.72	2.1
25	3.0	3.1	3.4	5.9	4.0	3.3	7.4	4.4	3.3	1.5	0.68	2.6
26	2.7	3.0	5.2	5.1	4.0	3.3	6.6	3.8	3.1	1.9	0.63	2.4
27	2.7	2.9	6.6	5.4	5.3	4.2	7.3	3.6	2.9	2.2	0.70	2.0
28	2.6	2.9	6.3	7.1	5.3	11.0	7.8	3.9	3.8	1.9	0.80	1.8
29	2.7	2.8	5.4	7.4	5.0	14.4	6.5	4.2	3.4	1.8	0.83	1.8
30	2.6	2.7	4.2	6.0	-------	14.7	5.5	3.6	3.0	1.7	0.79	2.9
31	2.5	-------	3.9	5.0	-------	17.6	-------	3.3	-------	1.5	0.95	-------

NOTES.—*River frozen December 13 to 18, 1915, January 18 to 22 and February 14 to March 27, 1916, inclusive. †Maximum 12.4 feet at 8 a. m.

SUSQUEHANNA BASIN—STATION NO. 3

TOWANDA CREEK AT MONROETON

DESCRIPTION OF STATION

Location.—At single span, steel, through truss, highway bridge at Monroeton, Bradford County.

Records Available.—Discharge complete from January 30, 1914, to September 30, 1916.

Drainage Area.—218 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the downstream side of the bridge and is read twice daily by Leon D. Pepper.

Channel.—The right bank is high and steep, the left bank is low but not subject to overflow, and the bed is composed of coarse gravel. The thread of the current passes under the bridge at an angle.

Discharge Measurement of Towanda Creek at Monroeton, Bradford County

(Drainage area, 218 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
11	July 12	Brown & Heagy, ----------	194	2.27	42	Surface and 0.6 method

Daily Mean Gage Heights, in feet, of Towanda Creek at Monroeton, Bradford County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	2.70	2.55	2.69	3.3	3.6	-------	5.7	3.2	2.6	2.47	2.35	2.03
2	3.1	2.51	2.68	4.3	3.2	-------	5.3	3.0	2.5	2.43	2.33	2.13
3	3.0	2.52	2.63	4.3	3.2	-------	4.3	2.95	3.8	2.43	2.29	2.14
4	2.85	2.48	2.64	3.5	3.2	-------	4.1	3.1	3.6	2.41	2.24	2.09
5	2.81	2.62	2.64	3.4	3.1	-------	3.8	2.95	3.1	2.35	2.22	2.03
6	2.90	2.52	2.65	4.0	3.0	-------	3.8	2.87	2.97	2.33	2.18	2.07
7	2.81	2.54	2.63	3.4	2.95	-------	3.6	2.82	2.99	2.29	2.17	2.07
8	2.77	2.57	2.63	3.2	3.2	-------	3.5	2.82	4.0	2.23	2.15	2.03
9	2.73	2.55	*	3.2	3.2	-------	3.4	2.85	3.6	2.25	2.15	2.03
10	2.71	2.54	-------	3.1	3.1	-------	3.4	2.73	3.4	2.55	2.13	1.99
11	2.68	2.57	-------	3.0	2.99	-------	3.5	2.72	3.4	2.36	2.13	1.99
12	2.63	2.53	-------	3.0	2.99	-------	4.0	2.61	3.3	2.30	2.11	1.99
13	2.63	2.53	-------	3.1	2.96	-------	4.3	2.57	3.1	2.23	2.11	1.98
14	2.61	2.55	-------	3.2	*	-------	5.5	2.54	2.94	2.22	2.09	1.96
15	2.61	2.57	-------	*	-------	-------	4.3	2.59	2.85	2.21	2.05	2.51
16	2.61	2.61	-------	-------	-------	-------	3.7	2.58	4.0	2.21	2.03	2.55
17	2.61	2.58	-------	-------	-------	-------	3.5	3.4	5.4	2.22	2.03	2.35
18	2.61	2.57	-------	-------	-------	-------	3.3	3.1	3.9	2.26	2.02	2.26
19	2.60	2.63	-------	-------	-------	-------	3.1	2.91	4.1	2.23	2.02	2.17
20	2.69	3.2	-------	-------	-------	-------	3.0	2.85	4.8	2.19	2.01	2.13
21	2.66	3.0	-------	-------	-------	-------	3.2	2.75	3.4	2.17	1.97	2.07
22	2.61	2.89	-------	-------	-------	-------	5.0	2.72	3.3	2.31	1.97	2.03
23	2.59	2.84	-------	3.4	-------	-------	4.5	2.87	3.1	2.21	2.04	2.38
24	2.61	2.81	-------	3.2	-------	-------	4.0	2.81	2.95	2.15	2.09	2.33
25	2.54	2.78	-------	3.0	-------	-------	3.6	2.73	2.83	2.17	2.07	2.25
26	2.58	2.76	3.6	3.0	-------	-------	3.5	2.81	2.75	3.2	2.02	2.18
27	2.57	2.75	3.3	3.3	-------	-------	3.9	2.68	2.63	3.0	2.05	2.15
28	2.56	2.75	3.3	3.4	-------	5.5	3.8	2.68	2.63	2.94	2.14	2.13
29	2.55	2.71	3.2	3.2	-------	5.1	3.5	2.65	2.58	2.66	2.17	2.93
30	2.58	2.72	3.2	3.1	-------	†5.7	3.3	2.63	2.53	2.52	2.13	3.3
31	2.57	-------	3.2	3.1	-------	5.7	-------	2.63	-------	2.45	2.04	-------

NOTES—*Creek frozen December 9 to 25, 1915, January 15 to 22, and February 14 to March 27, 1916, inclusive. †Maximum 6.8 feet at 5 p. m.

Daily Discharge, in Second-feet, of Towanda Creek at Monroeton, Bradford County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	210	138	205	655	960	160	4,320	565	160	104	64	12
2	480	120	200	1,860	565	150	3,540	405	115	89	58	22
3	405	124	175	1,860	565	115	1,860	370	1,190	89	48	23
4	302	108	180	850	565	95	1,580	480	960	82	38	17
5	276	170	180	750	480	80	1,190	370	480	64	34	12
6	335	124	185	1,440	405	110	1,190	316	384	58	28	15
7	276	133	175	750	370	195	960	283	393	48	26	15
8	252	146	175	565	565	210	850	283	1,440	36	24	12
9	228	138	*65	565	565	200	750	302	960	40	24	12
10	216	133	50	480	483	150	750	228	750	138	22	8
11	200	146	40	405	398	95	850	222	750	67	22	8
12	175	128	38	405	398	80	1,440	165	655	50	19	8
13	175	128	36	480	377	105	1,860	146	480	36	19	8
14	165	138	34	565	*170	115	3,920	133	363	34	17	6
15	165	146	32	*180	160	95	1,860	166	302	32	14	120
16	165	165	30	160	160	80	1,080	151	1,440	32	12	138
17	165	151	35	140	160	70	850	750	3,730	34	12	64
18	165	146	100	100	150	65	655	480	1,310	42	11	42
19	160	175	200	110	140	80	480	342	1,580	36	11	26
20	205	565	140	140	125	90	405	302	2,660	29	10	22
21	190	405	70	210	115	115	565	240	750	26	7	15
22	165	328	90	420	160	105	3,000	222	655	53	7	12
23	156	296	90	750	160	80	2,160	316	480	32	13	72
24	165	276	70	565	150	85	1,440	276	370	24	17	58
25	133	258	120	405	240	145	960	228	290	26	15	40
26	151	246	960	405	370	325	850	276	240	565	11	28
27	146	240	655	655	260	1,000	1,310	200	175	405	14	24
28	142	240	655	750	160	3,920	1,190	200	175	363	23	22
29	138	216	565	565	160	3,180	850	185	151	190	26	356
30	151	222	565	480	-------	†4,320	655	175	128	124	22	655
31	146	-------	565	480	-------	4,320	-------	175	-------	96	13	-------

NOTES—*Creek frozen December 9 to 25, 1915, January 15 to 22, and February 14 to March 27, 1916, inclusive, and discharge estimated from climatological data. †Maximum=7,080 second-feet. Discharges above 3,000 second-feet and below 9 second-feet are estimated.

Estimated Monthly Discharge of Towanda Creek at Monroeton, Bradford County

(Drainage area, 218 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	480	133	207	0.95	1.10
November	565	108	198	0.91	1.02
December	960	----------	215	0.99	1.14
1916					
January	1,860	----------	585	2.68	3.09
February	960	----------	329	1.51	1.63
March	††7,080	----------	643	2.95	3.40
April	††4,320	405	1,450	6.65	7.42
May	750	133	288	1.32	1.52
June	††3,730	115	784	3.60	4.02
July	565	24	98	0.45	0.52
August	64	††7	22	0.10	0.12
September	655	††6	62	0.28	0.31
The year	††7,080	††6	405	1.86	25.29

NOTES—Creek frozen December 9 to 25, 1915, January 15 to 22 and February 14 to March 27, 1916, inclusive, and discharge estimated from climatological data. ††Estimated.

SUSQUEHANNA BASIN—STATION NO. 4

WYALUSING CREEK AT WYALUSING

DESCRIPTION OF STATION

Location.—At single span, steel, through truss, highway bridge; first bridge after leaving Wyalusing, Bradford County.

Records Available.—Discharge complete from December 1, 1908, to January 3, 1909, and from June 1, 1909, to February 29, 1916.

Drainage Area.—214 square miles.

Gage.—A standard chain gage, whose elevation of zero was arbitrary, was located on the downstream side of the bridge and was read once daily by Alton S. Taylor.

Channel.—The right bank is high and not subject to overflow, the left bank is low and water passes around the bridge at high stages, and the bed is composed of rock and gravel.

Remarks.—There are several mills on the stream above the bridge which affect the flow during dry weather. Water passes through an abandoned race on the left side of the creek at a gage height of 2.9 feet. Station discontinued February 29, 1916.

Discharge Measurement of Wyalusing Creek at Wyalusing, Bradford County

(Drainage area, 214 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1915		Sq. ft.	Feet	Sec.-ft.	
39	Oct. 6	Bowen & Taylor	174	1.20	227	0.6 method

Daily Mean Gage Heights, in feet, of Wyalusing Creek at Wyalusing, Bradford County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.
1	0.35	0.43	0.7	1.6	3.2
2	0.8	0.41	0.6	2.1	2.0
3	1.2	0.39	0.6	3.3	1.7
4	0.9	0.35	0.6	2.3	1.5
5	0.6	0.28	0.33	1.9	*
6	1.3	0.40	0.6	4.0	-------
7	1.0	0.39	0.5	2.0	1.4
8	0.9	0.39	0.5	1.5	*
9	0.8	0.37	0.5	1.4	-------
10	0.6	0.31	*	*	1.4
11	0.7	0.37	-------	-------	1.2
12	0.6	0.34	-------	1.3	1.3
13	0.5	0.37	-------	1.2	*
14	0.5	0.37	-------	1.7	-------
15	0.41	0.40	-------	*	-------
16	0.6	1.1	-------	-------	-------
17	0.6	0.8	-------	-------	-------
18	0.5	0.7	-------	-------	-------
19	0.47	0.6	3.0	-------	-------
20	0.7	2.1	2.1	-------	-------
21	0.8	1.5	1.6	-------	-------
22	0.7	1.3	1.4	-------	-------
23	0.6	1.1	1.4	-------	-------
24	0.5	1.0	1.2	3.6	-------
25	0.40	0.9	1.1	2.6	-------
26	0.44	0.9	4.8	2.6	-------
27	0.48	0.8	2.7	2.1	-------
28	0.5	0.8	2.2	2.5	-------
29	0.48	0.7	2.1	2.1	-------
30	0.38	0.6	1.7	1.6	-------
31	0.41	-------	1.4	1.8	-------

NOTES—*Creek frozen December 10 to 18, 1915, January 10 and 11, January 15 to 23, February 13 to 29, 1916, inclusive, and slush ice jam February 5, 6, 8 and 9, 1916. Station discontinued February 29, 1916.

Daily Discharge, in Second-feet, of Wyalusing Creek at Wyalusing, Bradford County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.
1	32	42	86	384	1,550
2	106	39	68	652	592
3	220	37	68	1,640	432
4	130	32	68	780	340
5	68	24	30	534	*275
6	256	38	68	2,320	260
7	156	37	52	592	296
8	130	37	52	340	*300
9	106	34	52	296	340
10	68	27	*40	*300	296
11	86	34	30	280	220
12	68	31	28	256	256
13	52	34	26	220	*200
14	52	34	24	432	180
15	39	38	22	*430	170
16	68	186	20	275	160
17	68	106	25	200	150
18	52	86	810	150	110
19	48	68	1,370	140	95
20	86	652	652	190	85
21	106	340	384	275	75
22	86	256	296	600	85
23	68	186	296	1,700	80
24	52	156	220	1,930	70
25	38	130	186	1,020	160
26	44	130	3,120	1,020	400
27	49	106	1,100	652	160
28	52	106	714	932	110
29	49	86	652	652	75
30	36	68	432	384	-------
31	39	-------	296	482	-------

NOTES—*Creek frozen December 10 to 18, 1915, January 10 and 11, January 15 to 23, February 13 to 29, 1916, inclusive, and slush ice jam February 5, 6, 8 and 9, 1916, and discharge estimated from climatological data. Station discontinued February 29, 1916.

Estimated Monthly Discharge of Wyalusing Creek at Wyalusing, Bradford County

(Drainage area, 214 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	256	32	81	0.38	0.44
November	65?	24	106	0.50	0.56
December	3,120	20	364	1.70	1.96
1916					
January	2,320	140	647	3.02	3.48
February	1,550	70	259	1.21	1.30

NOTES—Creek frozen December 10 to 18, 1915, January 10 and 11, January 15 to 23, February 13 to 29, 1916, inclusive, and slush ice jam February 5, 6, 8 and 9, 1916, and discharge estimated from climatological data. Station discontinued February 29, 1916.

SUSQUEHANNA BASIN—STATION NO. 5

MEHOOPANY CREEK NEAR MEHOOPANY

DESCRIPTION OF STATION

Location.—At two span, steel, through truss, highway bridge, the second above the mouth of the creek near Mehoopany, Wyoming County.

Records Available.—Discharge measurements and gage heights from January 29, 1914, to September 30, 1916.

Drainage Area.—129 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the downstream side of the bridge and is read twice daily by E. Veargason.

Channel.—The right bank is high and steep, the left bank is low and not subject to overflow, and the bed is composed of coarse gravel.

Discharge Measurements of Mehoopany Creek near Mehoopany, Wyoming County

(Drainage area, 129 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1915		Sq. ft.	Feet	Sec.-ft.	
13	Oct. 6	Bowen & Taylor	73	1.30	76	0.6 method
	1916					
14	July 12	Boehringer & Knight	66	1.24	66	0.6 method

Daily Mean Gage Heights, in feet, of Mehoopany Creek near Mehoopany, Wyoming County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	0.91	0.95	1.0	1.6	2.3	1.5	4.9	2.0	1.5	1.3	1.4	0.81
2	1.3	0.91	1.1	3.0	2.2	1.7	4.4	1.8	1.4	1.2	1.4	0.83
3	1.2	0.83	1.1	2.6	2.1	1.6	3.3	1.7	2.0	1.4	1.3	0.81
4	1.2	0.91	1.0	2.5	1.9	1.4	2.9	1.7	2.6	1.3	1.2	0.79
5	1.2	0.89	0.97	2.3	1.8	1.5	2.8	1.6	2.1	1.2	1.2	0.74
6	1.3	0.94	1.0	2.4	1.8	1.4	2.7	1.6	1.9	1.1	1.1	0.69
7	1.2	0.81	0.98	2.2	1.7	1.6	2.6	1.6	2.0	1.0	1.1	0.67
8	1.2	0.76	0.88	1.6	1.3	1.6	2.8	1.6	2.8	0.97	1.1	0.69
9	1.1	0.80	0.79	1.6	1.4	1.8	2.4	1.5	2.6	0.97	1.1	0.73
10	1.0	0.77	0.88	1.4	1.5	1.7	2.2	1.4	2.5	1.1	1.1	0.69
11	1.0	0.79	*1.0	1.4	1.5	1.6	2.2	1.5	2.3	1.3	1.0	0.60
12	1.0	0.78	0.98	1.4	1.4	1.7	2.8	1.4	2.1	1.2	1.0	0.51
13	0.99	0.79	0.98	1.5	1.2	1.7	3.1	1.4	2.0	1.2	0.99	0.55
14	0.83	0.79	1.0	1.4	*1.2	1.7	3.9	1.3	1.8	1.2	0.94	0.64
15	0.80	0.91	1.2	1.3	1.2	1.7	3.4	1.4	1.8	1.1	0.87	1.2
16	0.85	1.1	0.98	1.4	1.5	1.6	2.7	1.4	4.7	1.1	0.86	1.3
17	0.96	0.97	0.98	1.4	1.4	1.5	2.4	1.8	†5.0	1.1	0.87	1.1
18	0.95	0.83	1.8	1.3	1.4	1.6	2.1	1.7	3.1	1.1	0.77	0.97
19	0.87	1.2	1.9	*1.3	1.4	1.8	2.0	1.5	2.8	1.1	0.66	0.87
20	0.91	1.6	1.8	1.4	1.6	1.7	1.8	1.4	2.6	0.99	0.67	0.70
21	1.0	1.4	1.5	1.4	1.5	1.7	2.0	1.3	2.4	0.99	0.64	0.63
22	0.95	1.4	1.4	2.0	1.5	1.7	2.2	1.4	2.3	1.6	0.61	0.57
23	0.77	1.3	1.4	2.2	1.6	1.6	2.4	1.4	2.2	1.2	0.59	1.7
24	0.77	1.3	1.3	1.8	1.5	1.7	2.3	1.4	1.9	1.1	0.61	1.6
25	0.85	1.1	1.3	1.7	1.7	1.8	2.1	1.4	1.8	1.1	0.57	1.4
26	0.85	1.1	2.1	1.8	1.9	2.4	2.2	1.3	1.6	4.6	0.63	1.1
27	0.91	1.0	1.8	2.0	1.7	3.0	2.3	1.2	1.6	3.7	0.64	0.89
28	1.0	1.1	1.8	2.1	1.7	3.7	2.3	1.3	1.5	2.8	0.75	0.77
29	0.91	1.2	1.9	1.9	1.6	3.2	2.4	1.6	1.5	1.9	0.87	0.85
30	0.87	1.1	1.7	1.8	-------	4.1	2.2	1.6	1.4	1.5	0.87	1.8
31	0.97	-------	1.6	1.8	-------	4.6	-------	1.5	-------	1.4	0.85	-------

NOTES—*Creek frozen December 11 to 18, 1915, January 19 to 23, and February 14 to March 27, 1916, inclusive. †Maximum 5.8 feet at 6 a. m.

SUSQUEHANNA BASIN—STATION NO. 6

TUNKHANNOCK CREEK AT DIXON

DESCRIPTION OF STATION

Location.—At single span, steel, through truss, highway bridge at Dixon, Wyoming County.

Records Available.—Discharge measurements and gage heights from January 28, 1914, to September 30, 1916.

Drainage Area.—393 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the upstream side of the bridge and is read twice daily by N. L. Kneller.

Channel.—The right bank is high and steep and not subject to overflow, the left bank is low but does not overflow, and the bed is composed of coarse gravel. The thread of the current passes under the bridge at an angle.

Discharge Measurements of Tunkhannock Creek at Dixon, Wyoming County
(Drainage area, 393 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1915		Sq. ft.	Feet	Sec.-ft.	
11	Oct. 5	Bowen & Taylor	439	2.04	254	0.6 method
	1916					
12	July 12	Boehringer & Knight	107	1.68	127	0.6 method

Daily Mean Gage Heights, in feet, of Tunkhannock Creek at Dixon, Wyoming County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	1.9	1.57	1.65	3.0	5.3	2.8	7.9	3.4	2.5	1.9	1.49	1.25
2	2.4	1.49	1.65	4.2	3.8	2.6	§8.2	3.1	2.3	1.8	1.49	1.22
3	2.4	1.48	1.66	4.6	3.5	2.5	5.8	2.9	2.6	2.0	1.40	1.20
4	2.2	1.58	1.61	3.7	3.0	2.4	5.4	2.9	3.2	2.0	1.34	1.21
5	2.0	1.62	1.60	3.4	3.0	2.3	4.8	2.7	2.6	1.8	1.38	1.18
6	2.2	1.61	1.60	4.9	2.9	2.2	4.7	2.6	2.7	1.8	1.34	1.15
7	2.0	1.51	1.58	3.5	2.9	2.3	4.2	2.4	2.6	1.68	1.31	1.11
8	2.0	1.56	1.52	3.0	2.4	2.5	3.9	2.6	3.9	1.64	1.32	1.18
9	1.9	1.58	1.58	2.8	2.5	2.3	3.8	2.5	3.2	1.61	1.45	1.12
10	1.8	1.66	1.54	2.8	2.5	2.2	3.6	2.3	3.0	1.9	1.52	1.10
11	1.8	1.59	1.54	2.9	2.3	2.2	3.6	2.1	2.9	1.7	1.39	1.06
12	1.8	1.62	1.51	2.7	2.3	2.1	3.8	2.0	2.9	1.68	1.34	1.05
13	1.8	1.56	*1.68	3.0	2.2	2.2	4.7	1.9	2.7	2.2	1.29	1.04
14	1.7	1.56	1.49	3.1	2.1	2.3	6.0	1.9	2.5	2.1	1.32	1.06
15	1.7	1.7	1.56	2.3	2.2	2.2	5.2	1.9	2.4	1.8	1.31	1.45
16	1.8	2.2	1.60	2.5	2.3	2.2	4.1	1.9	3.2	1.65	1.29	1.8
17	1.8	2.0	1.68	2.3	2.2	2.4	3.6	2.4	3.9	1.69	1.26	1.54
18	1.7	1.8	3.5	2.1	2.2	*2.2	3.4	2.6	3.3	1.69	1.26	1.34
19	1.7	1.8	4.7	2.1	2.2	2.2	3.0	2.2	3.4	1.64	1.24	1.32
20	1.7	2.0	3.6	2.3	2.1	2.2	2.9	2.1	3.6	1.55	1.22	1.32
21	1.8	1.9	3.2	2.3	1.9	2.1	3.0	2.0	3.1	1.48	1.18	1.29
22	1.8	1.8	2.8	3.8	2.0	2.1	3.8	1.9	3.0	1.51	1.19	1.25
23	1.68	1.8	2.7	4.2	2.0	2.2	4.0	2.9	2.7	1.45	1.28	2.5
24	1.56	1.8	2.6	3.3	2.1	2.1	3.8	2.8	2.5	1.45	1.31	2.1
25	1.59	1.8	2.5	3.1	2.2	2.1	3.5	2.6	2.4	1.45	1.32	1.8
26	1.62	1.7	†6.1	3.2	4.0	2.5	3.6	2.5	2.4	2.4	1.30	1.6
27	1.8	1.8	4.3	3.8	3.3	3.5	5.6	2.3	2.2	2.5	1.28	1.45
28	1.8	1.8	3.9	4.0	3.0	5.2	5.8	2.4	2.2	2.0	1.29	1.4
29	1.7	1.7	3.6	3.5	2.9	6.7	4.6	4.0	2.1	1.8	1.38	1.4
30	1.64	1.7	3.5	3.2	------	‡8.6	3.8	3.2	2.0	1.62	1.45	2.1
31	1.60	-------	3.5	3.4	------	9.2	-------	2.9	-------	1.58	1.36	-------

NOTES—*Creek frozen December 13 to 3 p. m. 18, 1915, and March 18 to 28, 1916, inclusive. †Maximum 7.1 feet at 8 a. m. ‡Maximum 10.7 feet at 12 p. m. §Maximum 9.2 feet at 8 a. m.

SUSQUEHANNA BASIN—STATION NO. 7

BOWMAN CREEK AT EATONVILLE

DESCRIPTION OF STATION

Location.—At single span, steel, through truss, highway bridge at Eatonville, Wyoming County.

Records Available.—Discharge measurements and gage heights from January 28, 1914, to September 30, 1916.

Drainage Area.—118 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the downstream side of the bridge and is read twice daily by Fred I. Wheelock.

Channel.—Both banks are high and not subject to overflow, and the bed is composed of coarse gravel.

Discharge Measurements of Bowman Creek at Eatonville, Wyoming County

(Drainage area, 118 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1915		Sq. ft.	Feet	Sec.-ft.	
15	Oct. 5	Bowen & Taylor	169	2.24	101	Surface and 0.6 method
	1916					
16	July 12	Boebringer & Knight	150	2.30	101	0.6 method

Daily Mean Gage Heights, in feet, of Bowman Creek at Eatonville, Wyoming County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	2.1	2.0	2.1	3.0	3.2	2.6	5.4	3.1	3.1	2.4	2.5	1.98
2	2.5	2.0	2.1	3.0	3.1	2.5	5.0	3.0	3.0	2.5	2.1	1.88
3	2.4	2.0	2.1	3.3	2.9	2.5	4.3	2.9	3.2	2.5	2.1	1.88
4	2.3	2.0	2.0	3.1	2.8	2.5	4.6	2.9	3.3	2.5	2.1	1.83
5	2.3	2.0	2.0	3.1	2.7	2.5	3.7	2.8	3.1	2.4	2.0	1.86
6	2.4	2.0	2.0	3.7	2.6	2.5	3.5	2.8	3.1	2.3	1.98	1.83
7	2.3	2.0	2.0	3.1	2.6	2.6	3.4	2.7	3.6	2.4	1.98	1.78
8	2.3	2.0	2.0	3.0	2.6	2.5	3.3	2.6	3.9	2.4	1.98	1.80
9	2.2	2.0	2.0	3.0	2.5	2.5	3.2	2.5	3.6	2.3	2.0	1.78
10	2.2	2.0	2.0	2.8	2.5	2.5	3.3	2.5	3.4	2.3	1.98	1.78
11	2.2	2.0	2.0	2.8	2.5	2.5	3.6	2.4	3.4	2.3	1.98	1.78
12	2.2	2.0	2.3	2.8	2.6	2.5	3.7	2.3	3.4	2.3	2.0	1.78
13	2.2	2.0	2.2	3.0	2.5	2.4	4.2	2.3	3.1	2.3	1.98	1.73
14	2.1	2.0	2.1	2.8	2.7	2.5	4.7	2.4	3.2	2.3	2.1	1.70
15	2.1	2.0	2.0	2.6	2.8	2.5	4.5	2.4	2.9	2.2	2.1	1.68
16	2.0	2.0	2.0	2.4	2.9	2.5	4.3	2.6	4.8	2.2	2.0	1.73
17	2.2	2.0	2.0	2.3	2.8	2.5	3.4	2.7	5.8	2.2	1.98	1.78
18	2.1	2.0	2.0	2.7	2.5	2.5	3.1	2.6	4.3	2.2	2.0	1.78
19	2.1	2.5	2.1	2.9	2.5	2.5	3.1	2.5	4.1	2.2	2.1	1.68
20	2.1	2.4	2.2	2.7	2.5	2.5	3.1	2.4	3.6	2.3	2.1	1.68
21	2.0	2.3	2.4	2.5	2.5	2.5	3.1	2.4	3.4	2.3	2.2	1.68
22	2.0	2.3	2.4	2.7	2.5	2.4	3.2	2.4	3.4	2.3	2.1	1.78
23	2.0	2.3	2.4	3.1	2.6	2.4	3.2	2.4	3.1	2.3	2.1	2.7
24	2.0	2.2	2.3	2.9	2.7	2.4	3.2	2.4	3.0	2.3	2.1	2.6
25	2.0	2.2	2.3	2.9	3.1	2.6	3.1	2.5	2.8	2.3	2.1	2.5
26	2.0	2.2	2.3	2.8	3.0	2.8	3.0	2.4	2.7	5.2	2.2	2.4
27	2.0	2.2	2.3	3.1	2.8	3.7	3.3	2.4	2.6	3.9	2.2	2.4
28	2.0	2.2	2.4	3.1	2.7	4.2	3.5	2.5	2.5	3.8	2.1	2.3
29	2.0	2.1	2.4	3.1	2.6	4.3	3.4	3.1	2.5	3.7	2.1	2.3
30	2.0	2.1	2.6	3.0	-------	†5.5	3.4	3.1	2.4	3.6	2.0	2.2
31	2.0	-------	2.8	2.9	-------	5.6	-------	3.1	-------	3.5	1.98	-------

NOTE—†Maximum 6.4 feet at 6.30 p. m.

SUSQUEHANNA BASIN—STATION NO. 8

LACKAWANNA RIVER AT MOOSIC

DESCRIPTION OF STATION

Location.—At single span, steel, through truss, highway bridge at River Street, or Moosic Road, Moosic, Lackawanna County.

Records Available.—Discharge complete from August 8, 1913, to September 30, 1916. For other records on this river see Lackawanna River at Scranton in the 1911, 1912 and 1913 reports of the Water Supply Commission.

Drainage Area.—265 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the downstream side of the bridge and is read twice daily by Nelson Ross.

Channel.—Both banks are high, although the right bank may overflow during extreme stages, and the bed is composed of rocks and culm.

Discharge Measurement of Lackawanna River at Moosic, Lackawanna County

(Drainage area, 265 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
17	July 10	Brown & Heagy	287	2.98	723	0.6 method

Daily Mean Gage Heights, in feet, of Lackawanna River at Moosic, Lackawanna County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	2.24	2.06	2.11	3.0	3.6	2.7	6.0	3.5	3.1	2.6	2.26	1.90
2	2.5	2.00	2.18	3.5	3.4	2.7	6.4	3.2	2.9	2.40	2.16	2.00
3	2.7	2.00	2.12	3.7	3.2	2.6	4.9	3.1	3.3	2.5	2.02	1.90
4	2.5	2.04	2.10	3.6	3.0	2.5	4.5	3.0	3.2	2.45	2.04	1.93
5	2.5	2.09	2.08	3.3	2.9	2.49	4.0	2.8	3.0	2.30	1.95	1.85
6	2.5	2.04	2.08	3.9	2.8	2.42	4.0	2.8	3.0	2.33	2.00	1.92
7	2.44	2.03	2.08	3.5	2.8	2.45	3.8	2.8	3.0	2.25	2.02	1.95
8	2.39	2.00	2.10	3.2	2.7	2.5	3.6	2.8	3.6	2.19	2.02	1.90
9	2.40	2.09	2.06	3.0	2.6	2.48	3.5	2.8	3.5	2.16	2.15	1.90
10	2.30	2.09	2.04	2.8	2.5	2.38	3.2	2.5	3.3	3.0	1.95	1.75
11	2.28	2.04	2.05	2.8	2.5	2.45	3.3	2.6	3.2	2.6	2.05	1.88
12	2.20	2.06	2.00	2.8	2.48	2.39	3.7	2.6	3.2	2.44	2.05	1.88
13	2.15	2.09	2.06	3.1	2.48	2.6	4.2	2.6	3.0	2.5	2.03	1.88
14	2.15	2.05	2.10	3.0	2.42	2.45	5.2	2.5	2.9	2.8	2.00	1.88
15	2.20	2.15	2.01	2.6	2.35	2.40	4.7	2.36	2.8	2.35	1.90	2.32
16	2.20	2.24	2.04	2.6	2.33	2.40	4.1	2.43	3.4	2.36	2.00	2.03
17	2.20	2.20	2.03	2.6	2.32	2.42	3.7	3.0	3.7	2.34	1.98	1.98
18	2.19	2.16	3.1	2.5	2.30	2.42	3.5	3.0	3.4	2.34	1.92	1.94
19	2.10	2.28	3.4	2.40	2.26	2.45	3.2	2.7	3.4	2.34	1.95	1.90
20	2.18	2.38	3.1	2.30	2.15	2.38	3.1	2.6	3.2	2.21	1.83	1.76
21	2.24	2.46	2.8	2.45	2.25	2.40	3.1	2.6	3.1	2.31	1.92	1.85
22	2.26	2.33	2.7	3.0	2.25	2.40	3.5	2.45	3.0	2.28	1.91	1.85
23	2.18	2.32	2.7	3.7	2.23	2.5	3.6	3.0	2.8	2.27	1.94	2.00
24	2.05	2.30	2.6	3.4	2.19	2.5	3.6	3.1	2.7	2.12	1.91	1.90
25	2.00	2.30	2.6	3.2	3.1	2.8	3.3	2.9	2.7	2.02	1.80	1.80
26	2.05	2.21	4.2	3.1	3.4	3.1	3.4	2.8	2.8	3.0	1.90	1.89
27	2.08	2.19	3.6	3.3	3.0	3.7	4.9	2.6	2.6	2.9	1.98	1.89
28	2.06	2.14	3.5	3.5	2.9	4.3	4.7	2.8	3.3	2.6	2.02	1.86
29	2.04	2.12	3.3	3.2	2.7	4.6	4.0	4.4	2.8	2.35	2.00	2.10
30	2.12	2.11	3.3	3.0	-------	5.3	3.6	4.0	2.5	2.16	1.85	1.88
31	2.10	-------	3.2	3.1	-------	6.1	-------	3.5	-------	2.25	1.93	-------

Daily Discharge, in Second-feet, of Lackawanna River at Moosic, Lackawanna County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	189	132	145	628	1,110	422	4,100	1,030	704	364	197	94
2	308	116	168	1,030	944	422	4,820	780	556	256	161	116
3	422	116	148	1,200	780	364	2,460	704	862	308	121	94
4	308	126	142	1,110	628	308	1,990	628	780	282	126	101
5	308	139	137	862	556	308	1,490	484	628	212	106	87
6	308	126	137	1,390	484	266	1,480	484	628	225	116	98
7	277	124	137	1,030	484	282	1,290	484	628	193	121	105
8	252	116	142	780	422	308	1,110	484	1,110	171	121	94
9	256	139	132	628	364	298	1,030	484	1,030	161	158	94
10	212	139	126	484	308	247	780	308	862	628	105	74
11	204	126	129	484	308	282	862	364	780	364	129	91
12	174	132	116	484	298	252	1,200	364	780	277	129	91
13	158	139	132	704	298	364	1,670	364	628	308	124	91
14	158	129	142	628	266	282	2,860	308	556	484	116	91
15	174	158	119	364	234	256	2,220	238	484	234	94	221
16	174	189	126	364	225	256	1,580	272	944	238	116	124
17	174	174	124	364	221	266	1,200	628	1,200	230	112	112
18	171	161	704	308	212	266	1,030	628	944	230	98	103
19	142	204	944	256	197	282	780	422	944	230	105	94
20	168	247	704	212	158	247	704	364	780	178	84	75
21	189	287	484	282	193	256	704	364	704	216	98	87
22	197	225	422	628	193	256	1,030	282	628	204	96	87
23	168	221	422	1,200	185	308	1,110	628	484	201	103	116
24	129	212	364	944	171	308	1,110	704	422	148	96	94
25	116	212	364	780	704	484	862	556	422	121	80	80
26	129	178	1,670	704	944	704	944	484	484	628	94	93
27	137	171	1,110	862	628	1,200	2,460	364	364	556	112	93
28	132	155	1,030	1,030	556	1,770	2,220	484	862	364	121	88
29	126	148	862	780	422	2,100	1,480	1,880	484	234	116	142
30	148	145	862	628	-------	3,000	1,110	1,480	308	161	87	91
31	142	-------	780	704	-------	4,280	-------	1,030	-------	193	101	-------

Estimated Monthly Discharge of Lackawanna River at Moosic, Lackawanna County

(Drainage area, 265 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	422	116	198	0.75	0.86
November	287	116	163	0.62	0.69
December	1,670	116	420	1.58	1.82
1916					
January	1,390	212	705	2.66	3.07
February	1,110	158	431	1.63	1.76
March	4,280	247	666	2.51	2.89
April	4,820	704	1,590	6.00	6.69
May	1,880	238	583	2.20	2.54
June	1,200	308	700	2.64	2.94
July	628	121	277	1.05	1.21
August	197	80	114	0.43	0.50
September	221	74	101	0.38	0.42
The year	4,820	74	494	1.86	25.39

SUSQUEHANNA BASIN—STATION NO. 9

NORTH BRANCH SUSQUEHANNA RIVER AT WILKES-BARRE

DESCRIPTION OF STATION

Location.—At four span, steel, through truss, highway bridge at ket street, Wilkes-Barre, Luzerne County.

Records Available.—Discharge complete from March 30, 1899, to September 30, 1916. For other records on this river see North Branch Susquehanna River at Binghamton, N. Y., North Branch Susquehanna River at Towanda and North Branch Susquehanna River at Danville.

Drainage Area.—9,960 square miles.

Gage.—A standard chain gage, whose elevation of zero is 505.185 feet above mean sea level, is located on the upstream side of the bridge and is read twice daily by Milton Wentz.

Channel.—The right bank is low and overflows at gage height of about 18.5 feet, the left bank is high and overflows only at extreme stages, and the bed is composed of gravel, sand and culm.

Remarks.—See following statement and table.

On account of results shown by four flood discharge measurements made in 1916, the upper part of the discharge curve at Wilkes-Barre has been more definitely defined so that it has been deemed advisable to republish gage heights with revised discharges above 18.4 feet, as shown in the following table.

Date	Gage Height	Revised Discharge	Reference
	Feet	Second-feet	
November 28, 1900	20.75	102,000	1910-11 Report
March 12, 1901	18.80	84,900	1910-11 Report
March 28, 1901	21.40	108,000	1910-11 Report
March 29, 1901	19.45	90,500	1910-11 Report
December 15, 1901	20.40	99,000	1910-11 Report
December 16, 1901	26.75	162,000	1910-11 Report
December 17, 1901	22.80	122,000	1910-11 Report
March 1, 1902	29.57	198,000	1910-11 Report
March 2, 1902	30.75	214,000	1910-11 Report
March 3, 1902	30.05	204,000	1910-11 Report
March 4, 1902	25.25	147,000	1910-11 Report
March 5, 1902	20.20	97,200	1910-11 Report
March 14, 1902	19.60	91,800	1910-11 Report
March 17, 1902	18.50	82,300	1910-11 Report
March 18, 1902	20.20	97,200	1910-11 Report
February 5, 1903	18.78	84,700	1910-11 Report
March 1, 1903	20.4	99,000	1910-11 Report
March 2, 1903	19.94	94,900	1910-11 Report
March 10, 1903	18.6	83,200	1910-11 Report
March 12, 1903	18.91	85,800	1910-11 Report
March 24, 1903	20.88	103,000	1910-11 Report
March 25, 1903	21.16	106,000	1910-11 Report
August 30, 1903	19.4	90,100	1910-11 Report
October 11, 1903	21.25	107,000	1910-11 Report
October 12, 1903	21.15	106,000	1910-11 Report
March 26, 1904	20.4	99,000	1910-11 Report
March 27, 1904	22.9	123,000	1910-11 Report
March 28, 1904	22.7	121,000	1910-11 Report
March 20, 1905	19.0	86,600	1910-11 Report
March 21, 1905	19.1	87,400	1910-11 Report
March 22, 1905	19.2	88,300	1910-11 Report
March 25, 1905	20.4	99,000	1910-11 Report
March 26, 1905	23.4	128,000	1910-11 Report
March 27, 1905	22.6	120,000	1910-11 Report
March 28, 1905	21.3	107,000	1910-11 Report
March 29, 1905	20.0	95,400	1910-11 Report
December 12, 1907	18.5	82,300	1910-11 Report
December 25, 1907	17.7	75,700	1910-11 Report
February 16, 1908	19.55	91,400	1910-11 Report
February 17, 1908	21.8	112,000	1910-11 Report
March 15, 1908	20.55	100,000	1910-11 Report
March 16, 1908	20.95	104,000	1910-11 Report
March 17, 1908	20.9	104,000	1910-11 Report
March 30, 1908	19.75	93,200	1910-11 Report
May 2, 1909	22.2	116,000	1910-11 Report
May 3, 1909	20.6	101,000	1910-11 Report
January 23, 1910	18.65	83,600	1910-11 Report
March 1, 1910	20.85	108,000	1910-11 Report
March 2, 1910	24.15	135,000	1910-11 Report
March 3, 1910	25.95	154,000	1910-11 Report
March 4, 1910	24.65	140,000	1910-11 Report
March 5, 1910	21.35	108,000	1910-11 Report
March 6, 1910	18.65	83,600	1910-11 Report
March 7, 1910	18.55	82,800	1910-11 Report
March 8, 1910	20.75	102,000	1910-11 Report
April 25, 1910	20.00	95,400	Foot note "b" for year 1910 in 1910-11 Report
April 26, 1910	19.80	93,600	1910-11 Report
March 29, 1911	19.2	88,300	1910-11 Report

Date	Gage Height	Revised Discharge	Reference
	Feet	Second-feet	
March 30, 1912	20.04	96,800	1912 Report
March 31, 1912	21.74	112,000	1912 Report
April 2, 1912	18.74	84,400	1912 Report
April 3, 1912	22.24	116,000	1912 Report
April 4, 1912	20.54	100,000	1912 Report
January 10, 1913	18.43	81,700	1913 Report
March 27, 1913	26.02	155,000	1913 Report
March 28, 1913	28.00	178,000	1913 Report
March 28, 1913	28.46	184,000	Foot note "a" 1913 Report
March 29, 1913	26.49	160,000	1913 Report
March 30, 1913	21.23	107,000	1913 Report
March 27, 1914	18.88	85,500	1914 Report
March 28, 1914	24.68	141,000	1914 Report
March 29, 1914	28.06	179,000	1914 Report
March 29, 1914	28.31	182,000	Foot note "†" 1914 Report
March 30, 1914	26.33	159,000	1914 Report
March 31, 1914	23.39	127,600	1914 Report
April 1, 1914	21.06	105,000	1914 Report
April 1, 1914	22.47	118,000	Foot note "‡" 1914 Report
April 2, 1914	18.82	85,000	1914 Report
April 3, 1914	19.57	91,600	1914 Report
April 9, 1914	19.89	94,400	1914 Report
April 10, 1914	20.02	95,600	1914 Report
May 14, 1914	20.57	101,000	1914 Report
January 8, 1915	18.8	84,900	Foot note "†" 1915 Report
February 25, 1915	20.29	98,000	1915 Report
February 26, 1915	23.23	126,000	1915 Report
February 26, 1915	23.3	127,000	Foot note "‡" 1915 Report
February 27, 1915	18.77	84,600	1915 Report
July 9, 1915	20.48	99,700	1915 Report
July 10, 1915	22.51	119,000	1915 Report

Discharge Measurements of North Branch Susquehanna River at Wilkes-Barre, Luzerne County

(Drainage area, 9,960 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1915		Sq. ft.	Feet	Sec.-ft.	
43	Oct. 8	Bowen & Taylor	5,395	7.01	15,146	Surface method
	1916					
44	April 1	Anthony & Batley	22,117	26.18	158,146	Surface method. North St. Bridge
45	April 2	Anthony & Batley	25,034	26.32	157,434	Surface method. Port Bowkley Bridge
46	April 3	Anthony & Batley	23.726	25.06	143.484	Surface method. Port Bowkley Bridge
47	April 3	Anthony & Batley	20,223	24.36	136,254	Surface method. North St. Bridge
48	July 11	Boehringer & Knight	4,055	4.29	5,859	0.6 method

Daily Mean Gage Heights, in feet, of North Branch Susquehanna River at Wilkes-Barre, Luzerne County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	4.4	4.6	4.9	7.5	9.8	6.6	26.0	9.7	6.3	5.5	3.8	2.6
2	4.2	4.6	4.8	7.5	10.6	6.1	26.4	8.7	5.8	5.1	2.6	2.7
3	4.6	4.4	4.7	9.5	10.1	5.8	24.8	8.0	5.6	4.8	3.4	2.6
4	5.2	4.3	4.6	14.8	8.5	5.7	21.4	7.4	9.7	4.6	3.3	2.6
5	5.9	4.2	4.5	13.0	7.1	5.2	18.5	7.4	11.0	4.4	3.2	2.5
6	5.5	4.2	4.3	12.0	6.8	5.0	15.7	7.3	8.6	4.5	3.1	2.5
7	7.2	4.2	4.2	15.0	6.6	4.5	14.4	6.9	7.4	4.5	3.0	2.4
8	7.1	4.4	4.1	13.5	5.9	4.7	13.3	6.5	8.0	4.2	2.9	2.9
9	6.3	4.4	4.1	11.4	5.7	5.0	12.6	6.6	10.1	4.0	2.9	2.7
10	5.7	4.3	4.0	9.3	5.3	4.7	11.7	6.6	8.9	4.8	2.8	2.7
11	5.3	4.2	4.0	8.2	5.1	5.1	11.2	6.4	8.3	4.3	2.8	2.6
12	5.1	4.3	4.0	8.0	5.3	4.9	11.1	6.1	8.3	4.1	2.8	2.6
13	4.8	4.2	3.3	7.5	4.9	4.8	12.4	5.6	9.3	4.3	2.8	2.8
14	4.6	4.0	3.4	7.6	*	5.0	15.5	5.3	8.1	4.2	2.7	2.6
15	4.5	4.0	3.3	7.1	-------	4.7	18.6	5.0	7.2	4.3	2.7	3.2
16	4.4	4.2	3.4	6.3	-------	4.0	17.5	4.8	6.7	5.1	2.8	2.8
17	8.2	4.4	3.5	5.9	-------	4.2	13.6	4.9	11.7	5.2	2.7	3.0
18	7.4	5.1	4.2	*	-------	4.2	12.1	6.1	15.6	4.7	2.7	3.3
19	6.4	4.9	6.2	-------	-------	4.2	11.1	11.0	15.2	4.3	2.6	3.4
20	5.9	5.0	9.1	-------	-------	4.4	10.4	9.5	11.0	4.0	2.6	3.4
21	8.4	6.0	8.5	-------	-------	4.5	9.6	8.3	10.7	3.9	2.5	3.2
22	7.4	6.7	7.4	-------	4.7	4.6	9.7	7.3	9.2	3.8	2.5	3.0
23	6.6	6.3	6.8	7.7	5.1	4.4	13.8	6.8	8.5	3.9	2.5	3.2
24	6.0	6.1	6.5	10.0	5.2	4.1	15.3	8.3	7.5	3.8	2.5	3.5
25	5.6	5.8	6.2	10.3	5.0	4.3	13.5	8.6	6.7	3.7	2.5	3.8
26	5.2	5.5	7.8	9.3	*	4.5	11.8	7.7	6.3	4.2	2.5	4.6
27	5.0	5.2	**9.6	8.9	-------	5.6	11.4	6.8	5.8	6.7	2.5	4.4
28	4.8	5.1	11.4	9.8	6.3	11.8	14.0	6.2	5.7	5.5	2.5	4.0
29	4.6	5.1	11.3	**11.3	7.1	19.6	12.8	8.0	6.9	4.8	2.6	3.7
30	5.0	5.0	10.1	12.2	-------	21.6	10.9	7.8	6.1	4.3	2.6	3.8
31	4.7	-------	8.5	10.8	-------	24.6	-------	6.9	-------	4.1	2.7	-------

NOTES—*River frozen January 18 to 22, February 14 to 21, and February 26 and 27, 1916, inclusive. **Gage damaged and gage heights are approximate from December 27, 1915 to January 12, 1916, inclusive, and from January 29 to February 2, 1916, inclusive.

Daily Discharge, in Second-feet, of North Branch Susquehanna River at Wilkes-Barre, Luzerne County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	5,380	6,040	7,080	17,900	28,600	13,900	155,000	28,200	12,600	9,320	3,740	1,400
2	4,800	6,040	6,730	17,900	32,500	11,700	159,000	23,400	10,500	7,810	3,250	1,540
3	6,040	5,380	6,380	27,200	30,100	10,500	142,000	20,200	9,710	6,730	2,780	1,400
4	8,180	5,080	6,040	54,400	22,500	10,100	108,000	17,400	28,200	6,040	2,560	1,400
5	10,900	4,800	5,700	44,600	16,100	8,180	82,300	17,400	34,500	5,380	2,360	1,280
6	9,320	4,800	5,080	39,500	14,800	7,440	60,200	17,000	23,000	5,700	2,180	1,280
7	16,500	4,800	4,800	55,600	13,900	5,700	52,000	15,200	17,400	5,700	2,000	1,160
8	16,100	5,280	4,520	47,200	10,900	6,380	46,200	13,400	20,200	4,800	1,840	1,840
9	12,600	5,380	4,520	36,400	10,100	7,440	42,500	13,900	30,100	4,260	1,840	1,540
10	10,100	5,080	4,200	26,300	8,560	6,380	37,900	13,900	24,400	6,730	1,680	1,540
11	8,560	4,800	4,200	21,100	7,810	7,810	35,400	13,000	21,600	5,080	1,680	1,400
12	7,810	5,080	4,200	20,200	8,560	7,080	34,900	11,700	21,600	4,520	1,680	1,400
13	6,730	4,800	2,500	17,900	7,080	6,730	41,500	9,710	26,300	5,080	1,680	1,680
14	6,040	4,200	2,780	18,300	*6,160	7,440	58,900	8,560	20,600	4,800	1,540	1,400
15	5,700	4,200	2,500	16,100	4,480	6,380	83,200	7,440	16,500	5,080	1,540	2,360
16	5,380	4,800	2,780	12,600	3,950	4,260	74,100	6,730	14,300	7,810	1,680	1,680
17	21,100	5,380	3,010	10,900	4,280	4,800	47,800	7,080	37,900	8,180	1,540	2,000
18	17,400	7,810	4,800	*8,350	6,440	4,800	40,000	11,700	59,600	6,380	1,540	2,560
19	13,000	7,080	12,200	6,300	7,800	4,800	34,900	34,500	56,900	5,080	1,400	2,780
20	10,900	7,440	25,300	5,130	6,300	5,380	31,500	27,200	34,500	4,260	1,400	2,780
21	22,000	11,300	22,500	4,950	5,380	5,700	27,700	21,600	33,000	4,000	1,280	2,360
22	17,400	14,300	17,400	9,520	6,380	6,040	28,200	17,000	25,800	3,740	1,280	2,000
23	13,900	12,600	14,800	18,800	7,810	5,380	48,800	14,800	22,500	4,000	1,280	2,360
24	11,300	11,700	13,400	29,600	8,180	4,520	57,500	21,600	17,900	3,740	1,280	3,010
25	9,710	10,500	12,200	31,000	7,440	5,080	47,200	23,000	14,300	3,500	1,280	3,740
26	8,180	9,320	19,200	26,300	*8,350	5,700	38,400	18,800	12,600	4,800	1,280	6,040
27	7,440	8,180	27,700	24,400	10,100	9,710	36,400	14,800	10,500	14,300	1,280	5,380
28	6,730	7,810	36,400	28,600	12,600	38,400	49,900	12,200	10,100	9,320	1,280	4,260
29	6,040	7,810	35,900	35,900	16,100	91,800	43,600	20,200	15,200	6,730	1,400	3,500
30	7,440	7,440	30,100	40,500	-------	110,000	34,000	19,200	11,700	5,080	1,400	3,740
31	6,380	-------	22,500	33,500	-------	140,000	-------	15,200	-------	4,520	1,540	-------

NOTE—*River frozen January 18 to 22, 1915, February 14 to 21, and February 26 and 27, 1916, inclusive, and discharge estimated from North Branch Susquehanna River at Danville.

Estimated Monthly Discharge of North Branch Susquehanna River at Wilkes-Barre, Luzerne County

(Drainage area, 9,960 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	22,000	4,800	10,300	1.03	1.19
November	14,300	4,260	6,980	0.70	0.78
December	36,400	2,560	12,000	1.20	1.38
1916					
January	55,600		25,400	2.55	2.94
February	32,500		11,500	1.16	1.25
March	140,000	4,260	18,400	1.85	2.13
April	159,000	27,700	59,300	5.95	6.64
May	34,500	6,730	16,600	1.67	1.92
June	59,600	9,710	23,100	2.32	2.59
July	14,300	3,500	5,890	0.59	0.68
August	3,740	1,280	1,760	0.18	0.21
September	6,040	1,160	2,360	0.24	0.27
The year	159,000	1,160	16,100	1.62	21.98

NOTE—River frozen January 18 to 22, 1915, February 14 to 21, and February 26 and 27, 1916, and discharge estimated from North Branch Susquehanna River at Danville.

SUSQUEHANNA BASIN—STATION NO. 10

NESCOPECK CREEK ABOVE ST. JOHNS

DESCRIPTION OF STATION

Location.—At single span, steel truss, highway bridge, the first above the Wilkes-Barre and Hazleton Railway Bridge at St. Johns, Luzerne County.

Records Available.—Discharge measurement and gage heights from July 13 to September 30, 1916.

Drainage Area.—49 square miles.

Gage.—A standard chain gage, whose elevation of zero is 1116.47 feet above mean sea level, is located on the downstream side of the bridge and is read twice daily by Mrs. Edwin Sterling.

Channel.—Both banks are high, and the bed is composed of gravel and boulders.

Remarks.—During floods water passes around the right of the bridge through a culvert under the road leading to the bridge.

Discharge Measurement of Nescopeck Creek above St. Johns, Luzerne County

(Drainage area, 49 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
1	July 13	Boehringer & Knight	71	2.08	95	0.6 method

Daily Mean Gage Heights, in feet, of Nescopeck Creek above St. Johns, Luzerne County, for the year ending September 30, 1916

Day	July	Aug.	Sep.
1		2.00	1.15
2		1.90	1.10
3		1.80	1.10
4		1.75	1.10
5		1.70	1.10
6		1.70	1.10
7		1.70	1.20
8		1.70	1.20
9		1.60	1.20
10		1.50	1.10
11		1.45	1.10
12		1.40	1.00
13	2.10	1.40	1.00
14	1.95	1.40	1.00
15	1.90	1.40	2.85
16	1.80	1.30	1.75
17	1.80	1.30	1.40
18	1.85	1.30	1.40
19	1.90	1.30	1.40
20	1.70	1.30	1.30
21	1.55	1.30	1.30
22	1.60	1.20	1.20
23	1.65	1.20	1.80
24	1.70	1.20	1.55
25	1.75	1.20	1.60
26	3.45	1.20	1.60
27	3.95	1.20	1.50
28	3.20	1.20	1.45
29	2.50	1.20	1.55
30	2.30	1.20	1.75
31	2.15	1.20	

SUSQUEHANNA BASIN—STATION NO. 11

FISHING CREEK AT BLOOMSBURG

DESCRIPTION OF STATION

Location.—At single span, wooden covered, highway bridge known as "Red Rock Bridge" at Bloomsburg, Columbia County.

Records Available.—Discharge measurements and gage heights from January 27, 1914, to September 30, 1916.

Drainage Area.—355 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the upstream side of the bridge and is read twice daily by L. Norman Cox.

Channel.—Both banks are high and not subject to overflow, and the bed is composed of sand and gravel.

Discharge Measurements of Fishing Creek at Bloomsburg, Columbia County

(Drainage area, 355 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis	Remarks
	1915		Sq. ft.	Feet	Sec.-ft.	
8	Oct. 4	Bowen & Taylor	360	3.08	237	0.6 method
	1916					
9	July 14	Boehringer & Knight	479	4.00	819	0.6 method

Daily Mean Gage Heights, in feet, of Fishing Creek at Bloomsburg, Columbia County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	2.95	2.85	3.0	3.9	4.9	3.3	8.5	4.3	3.5	3.4	4.4	2.65
2	3.1	2.79	2.97	4.0	4.8	3.4	9.0	4.2	3.4	3.3	4.0	3.0
3	3.2	2.82	2.90	5.2	4.6	3.4	7.4	4.0	3.6	5.9	3.8	2.66
4	3.1	2.78	2.89	4.6	4.2	3.4	5.9	4.0	4.9	4.1	3.7	2.64
5	3.0	2.82	2.66	4.3	4.2	3.3	5.4	3.8	4.3	3.8	3.6	2.65
6	3.2	2.86	2.81	4.7	4.1	3.1	5.1	3.7	4.0	3.6	3.5	2.63
7	3.1	2.82	2.88	4.6	4.0	3.3	4.8	3.6	4.3	3.5	3.5	2.51
8	3.1	2.90	2.81	4.1	3.7	3.5	4.6	3.6	5.4	3.3	3.4	2.89
9	3.0	2.84	2.81	4.0	3.8	3.4	4.5	3.6	5.0	3.5	3.4	2.72
10	3.0	2.82	2.90	4.0	3.6	3.4	4.5	3.5	4.7	5.3	3.3	2.76
11	2.95	2.80	2.89	4.0	3.5	3.3	4.4	3.4	4.5	4.9	3.3	2.71
12	2.84	2.82	2.93	3.8	3.5	3.4	4.7	3.3	4.4	4.3	3.2	2.82
13	2.96	2.84	2.85	4.5	3.5	3.4	4.8	3.3	4.2	4.1	3.2	2.72
14	2.94	2.82	*2.91	4.6	3.4	4.0	†8.1	3.2	3.9	4.0	3.2	2.51
15	2.92	2.97	3.0	3.8	3.4	3.6	8.0	3.2	3.8	3.7	3.1	3.6
16	2.92	3.1	2.88	4.0	3.4	3.6	5.9	3.3	5.1	3.6	3.1	2.97
17	2.90	2.88	2.99	*4.8	3.4	3.5	5.3	3.3	7.8	3.5	3.1	3.2
18	2.90	2.88	3.5	3.8	3.4	3.5	4.8	3.5	6.0	3.5	3.0	2.88
19	2.86	2.98	4.8	3.7	3.4	3.4	4.5	3.4	5.4	3.4	3.0	3.0
20	2.91	3.1	4.2	3.7	3.4	3.4	4.3	3.3	5.1	3.3	3.0	2.65
21	2.98	3.2	4.8	3.7	3.3	3.4	4.2	3.2	4.7	3.9	3.0	2.60
22	2.89	3.1	3.7	4.3	3.4	3.3	4.9	3.2	4.9	5.3	2.97	2.57
23	2.90	3.1	3.6	5.1	3.2	3.4	4.8	3.5	4.4	4.2	2.82	4.4
24	2.84	3.1	3.5	4.5	3.2	3.2	4.6	3.6	4.2	3.8	2.75	4.1
25	2.81	3.1	3.4	4.1	3.4	3.3	4.5	3.4	4.0	3.9	2.91	3.6
26	2.89	3.0	4.7	4.2	4.0	4.0	4.4	3.4	3.9	‡14.2	2.99	3.4
27	2.93	2.89	4.3	4.6	3.8	6.0	4.6	3.3	3.2	8.0	3.2	3.3
28	2.92	3.0	4.2	5.0	3.6	7.4	4.8	3.3	3.8	6.7	2.92	3.2
29	2.90	3.0	4.3	4.7	3.5	7.7	4.7	3.8	3.6	5.3	3.0	3.3
30	2.88	3.0	4.1	4.5	-------	8.2	4.5	3.7	3.5	4.7	3.0	4.0
31	2.83	-------	3.7	4.4	-------	8.8	-------	3.8	-------	4.4	2.94	-------

NOTES—*Creek frozen December 14 to 18, 1915, and January 17 to 20, 1916, inclusive. †Maximum 10.4 feet at 6 p. m. ‡Maximum 14.9 feet at 6 p. m.

SUSQUEHANNA BASIN—STATION NO. 12

NORTH BRANCH SUSQUEHANNA RIVER AT DANVILLE.

DESCRIPTION OF STATION

Location.—At seven span, steel, through truss, highway bridge between Danville and South Danville, Montour County.

Records Available.—Discharge complete from March 25, 1899, to December 31, 1903, and from March 23, 1905, to September 30, 1916. For other records on this river see North Branch Susquehanna River at Binghamton, N. Y., North Branch Susquehanna River at Towanda and North Branch Susquehanna River at Wilkes-Barre.

Drainage Area.—11,200 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the downstream side of the bridge and is read twice daily by E. F. Bell.

Channel.—The right bank overflows in extreme stages, the left bank is high and does not overflow, and the bed is composed of rock and gravel.

Discharge Measurements of North Branch Susquehanna River at Danville, Montour County

(Drainage area, 11,200 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1915		Sq. ft.	Feet	Sec.-ft.	
36	Oct. 4	Bowen & Taylor	3,025	3.80	7,655	0.6 method
	1916					
37	April 26	Bronson	10,090	10.83	47,650	Surface method
38	May 9	Wilson	4,295	5.36	14,775	Surface method
39	July 14	Boehringer & Knight	3,128	3.97	8,260	0.6 method

Daily Mean Gage Heights, in feet, of North Branch Susquehanna River at Danville, Montour County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	3.8	3.8	4.1	6.2	8.0	6.4	21.0	8.6	5.4	5.0	3.9	2.4
2	3.6	3.8	4.0	6.2	8.5	5.8	21.5	7.7	5.0	4.6	3.6	2.4
3	3.6	3.7	3.9	7.8	9.2	5.3	21.1	7.0	4.8	5.0	3.4	2.4
4	3.8	3.6	3.8	11.9	8.0	5.2	18.7	6.4	5.8	4.5	3.2	2.4
5	4.6	3.4	3.6	10.5	6.8	4.9	16.4	6.2	9.7	4.2	3.2	2.5
6	4.8	3.5	3.5	9.8	6.2	4.5	14.1	6.1	8.2	3.9	3.0	2.4
7	4.6	3.4	3.5	12.1	5.9	4.2	12.4	5.8	6.8	3.9	2.9	2.3
8	5.9	3.5	3.4	10.9	5.8	4.4	11.4	5.6	6.6	3.8	2.9	2.5
9	5.7	3.6	3.4	9.2	5.4	4.4	10.8	5.4	7.6	3.7	2.8	2.5
10	4.9	3.5	3.3	7.6	5.0	4.5	10.1	5.5	8.4	5.0	2.8	2.6
11	4.5	3.5	3.4	6.8	4.6	4.4	9.5	5.3	7.2	4.4	2.7	2.5
12	4.2	3.4	3.0	6.6	4.6	4.6	9.3	5.0	6.9	4.0	2.7	2.4
13	4.0	3.5	2.9	6.6	4.5	4.4	9.6	4.8	7.5	3.9	2.6	2.4
14	3.9	3.4	2.7	6.8	3.9	4.8	13.2	4.6	7.4	3.9	2.6	2.4
15	3.6	3.2	*	6.2	3.3	4.6	15.8	4.4	6.4	3.9	2.6	3.1
16	3.7	3.4	-------	6.1	3.0	4.1	15.5	4.2	5.9	4.1	2.5	3.3
17	4.2	3.5	-------	5.4	3.2	3.9	12.6	4.1	8.2	4.4	2.5	2.8
18	6.4	3.7	-------	4.6	4.0	3.6	10.8	4.4	12.5	4.3	2.5	2.7
19	5.6	4.0	4.9	4.0	4.4	3.6	9.8	9.2	13.8	4.0	2.5	2.8
20	4.9	4.0	6.8	3.6	4.0	3.8	9.0	8.4	10.2	3.8	2.6	3.0
21	5.6	4.2	7.6	3.5	3.6	4.0	8.4	7.9	9.4	3.4	2.4	2.9
22	6.4	5.4	6.8	4.8	3.6	4.0	8.1	6.2	8.6	4.6	2.4	2.8
23	5.6	5.2	6.0	7.4	3.6	4.1	9.1	5.7	7.3	3.7	2.4	3.2
24	5.2	5.1	5.6	7.2	3.8	4.0	12.2	6.0	6.8	3.6	2.4	3.4
25	4.6	4.8	5.3	8.6	4.0	3.8	11.6	7.1	6.0	3.8	2.4	3.4
26	4.4	4.7	6.0	8.4	4.6	4.2	10.4	6.6	5.6	8.3	2.4	3.3
27	4.2	4.4	7.8	7.8	5.0	5.7	9.6	6.0	5.2	7.4	2.4	3.8
28	4.0	4.3	9.3	7.8	5.2	7.4	11.0	5.5	5.2	6.2	2.4	3.6
29	3.9	4.2	9.2	9.2	5.6	15.9	11.4	5.4	5.2	5.2	2.4	3.4
30	3.7	4.0	8.2	9.9	-------	18.0	10.5	6.9	5.8	4.5	2.4	3.6
31	3.9	-------	7.0	8.8	-------	19.6	-------	6.1	-------	4.0	2.4	-------

NOTE—*River frozen December 15 to 18, 1915, inclusive.

Daily Discharge, in Second-feet, of North Branch Susquehanna River at Danville, Montour County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	7,220	7,220	8,550	19,100	30,100	20,200	183,000	34,400	14,800	12,800	7,660	2,300
2	6,400	7,220	8,100	19,100	33,600	16,900	191,000	28,100	12,800	10,900	6,400	2,300
3	6,400	6,800	7,650	28,800	39,100	14,300	185,000	23,700	11,800	12,800	5,600	2,300
4	7,220	6,400	7,220	63,300	30,100	13,800	146,300	20,200	16,000	10,400	4,840	2,300
5	10,900	5,600	6,400	50,300	22,500	12,300	114,000	19,100	43,300	9,000	4,840	2,560
6	11,800	6,000	6,000	44,200	19,100	10,400	88,200	18,500	31,500	7,660	4,120	2,300
7	10,900	5,600	6,000	65,300	17,500	9,000	68,300	16,900	22,500	7,660	3,780	2,060
8	17,500	6,000	5,600	53,900	16,900	9,920	58,500	15,900	21,300	7,220	3,780	2,060
9	16,400	6,400	5,600	39,100	14,800	9,920	53,000	14,800	27,500	6,800	3,460	2,560
10	12,300	6,000	5,220	27,500	12,800	10,400	46,800	15,300	32,900	12,800	3,460	2,840
11	10,400	6,000	5,600	22,500	10,900	9,920	41,600	14,300	24,900	9,920	3,140	2,560
12	9,000	5,600	4,120	21,300	10,900	10,900	39,900	12,800	23,100	8,100	3,140	2,300
13	8,100	6,000	3,780	21,300	10,400	9,920	42,400	11,800	26,800	7,660	2,840	2,300
14	7,660	5,600	3,140	22,500	7,660	11,800	76,500	10,900	26,200	7,660	2,840	2,300
15	6,400	4,840	*1,800	19,100	5,220	10,900	104,000	9,920	20,200	7,660	2,840	4,480
16	6,800	5,600	2,200	18,500	4,120	8,550	102,000	9,000	17,500	8,550	2,560	5,220
17	9,000	6,000	4,000	14,800	4,840	7,660	70,300	8,550	31,500	9,920	2,560	3,460
18	20,200	6,800	6,000	10,900	8,100	6,400	53,000	9,920	69,300	9,460	2,560	3,140
19	15,900	8,100	12,300	8,100	9,920	6,400	44,200	39,100	82,900	8,100	2,560	3,460
20	12,300	8,100	22,500	6,400	8,100	7,220	37,500	32,900	47,600	7,220	2,840	4,120
21	15,900	9,000	27,500	6,000	6,400	8,100	32,900	29,400	40,800	5,600	2,300	3,780
22	20,200	14,800	22,500	11,800	6,400	8,100	30,800	19,100	34,400	10,900	2,300	3,460
23	15,900	13,800	18,000	26,200	6,400	8,550	38,300	16,400	25,600	6,800	2,300	4,840
24	13,800	13,300	15,900	24,900	7,220	8,100	66,300	18,000	22,500	6,400	2,300	5,600
25	10,900	11,800	14,300	34,400	8,100	7,220	67,400	24,300	18,000	7,220	2,300	5,600
26	9,920	11,300	18,000	32,900	10,900	9,000	49,400	21,300	15,900	32,200	2,300	5,220
27	9,000	9,920	28,800	28,800	12,800	16,400	42,400	18,000	13,800	26,200	2,300	7,220
28	8,100	9,460	39,900	28,800	13,800	26,200	54,800	15,300	13,800	19,100	2,300	6,400
29	7,660	9,000	39,100	39,100	15,900	107,000	58,500	14,800	13,800	13,800	2,300	5,600
30	6,800	8,100	31,500	45,000	-------	136,000	45,900	23,100	16,900	10,400	2,300	6,400
31	7,660	-------	23,700	35,900	-------	160,000	-------	18,500	-------	8,100	2,300	-------

NOTES.—*River frozen December 15 to 18, 1915, inclusive, and discharge estimated from North Branch Susquehanna River at Wilkes-Barre. Discharges above 183,240 second-feet are estimated.

Estimated Monthly Discharge of North Branch Susquehanna River at Danville, Montour County

(Drainage area, 11,200 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	20,200	6,400	10,900	0.97	1.12
November	14,800	4,840	7,880	0.70	0.78
December	39,900	----------	13,300	1.19	1.37
1916					
January	65,300	6,000	28,700	2.56	2.95
February	39,100	4,120	14,000	1.25	1.35
March	160,000	6,400	23,000	2.05	2.36
April	††191,000	30,800	74,200	6.62	7.39
May	39,100	8,550	18,800	1.68	1.94
June	82,900	11,800	27,400	2.45	2.73
July	32,200	5,600	10,600	0.95	1.10
August	7,630	2,300	3,260	0.29	0.33
September	7,220	2,060	3,700	0.33	0.37
The year	††191,000	2,060	19,600	1.75	21.40

NOTES.—River frozen December 15 to 18, 1915, inclusive, and discharge estimated from North Branch Susquehanna River at Wilkes-Barre. ††Estimated.

SUSQUEHANNA BASIN—STATION NO. 13

WEST BRANCH SUSQUEHANNA RIVER AT BOWER

DESCRIPTION OF STATION

Location.—At single span, steel, through truss, highway bridge about 4 miles below Mahaffey, Clearfield County.

Records Available.—Discharge complete from October 2, 1913, to September 30, 1916. For other records on this river see West Branch Susquehanna River at Clearfield, West Branch Susquehanna River at Renovo, West Branch Susquehanna River at Williamsport and West Branch Susquehanna River at Lewisburg; also see West Branch Susquehanna River at Allenwood in the 1910-11 Report of the Water Supply Commission.

Drainage Area.—320 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the downstream side of the bridge and is read twice daily by A. T. Bell.

Channel.—The right bank is low and subject to overflow at extreme stages, the left bank is high and not subject to overflow, and the bed is composed of gravel.

Discharge Measurement of West Branch Susquehanna River at Bower, Clearfield County

(Drainage area, 320 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
18	1916 Aug. 14	Wilson & Brown	Sq. ft. 82	Feet 4.37	Sec.-ft. 76	Wading 350 feet above bridge

Daily Mean Gage Heights, in feet, of West Branch Susquehanna River at Bower, Clearfield County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	4.3	4.8	4.9	6.4	8.4	5.5	7.8	5.7	4.8	5.1	4.4	4.1
2	5.7	4.7	5.0	10.8	7.5	5.4	8.0	5.5	4.7	5.0	4.3	5.5
3	5.8	4.6	4.8	9.6	7.0	5.3	7.4	5.4	12.3	4.9	4.15	4.7
4	4.8	4.5	4.7	7.9	6.4	5.4	7.0	5.7	9.0	4.8	4.05	4.4
5	5.6	4.6	4.6	7.2	6.2	5.3	6.6	5.5	7.4	4.8	4.01	4.2
6	5.3	4.6	4.6	8.0	6.0	*	6.3	5.4	6.5	4.7	4.17	4.3
7	4.9	4.6	4.7	7.0	6.5	-------	6.1	5.3	6.5	4.6	4.05	4.3
8	4.6	4.5	4.6	6.3	5.4	-------	5.8	5.4	6.8	4.6	4.4	4.3
9	4.7	4.4	4.6	6.0	5.8	6.6	5.7	5.4	6.5	4.4	4.2	4.3
10	4.5	4.5	4.3	6.0	5.8	6.4	5.8	5.2	6.7	4.9	4.18	4.2
11	4.5	4.4	4.6	6.1	5.5	5.8	6.4	5.1	6.8	4.7	4.15	4.16
12	4.4	4.4	4.7	6.6	5.6	5.4	6.6	5.0	6.4	4.5	5.4	4.06
13	4.3	4.5	4.7	8.0	6.2	5.8	6.3	4.9	6.1	4.5	4.7	4.01
14	4.3	4.4	4.6	7.4	5.6	7.4	8.7	4.9	5.8	6.2	4.4	4.08
15	4.3	4.5	4.6	6.8	5.7	6.5	8.7	4.8	5.8	5.1	4.2	4.6
16	4.3	5.2	4.8	6.2	5.8	6.0	7.6	5.3	7.5	4.8	4.10	4.7
17	4.3	4.8	5.0	5.4	5.7	5.9	7.0	6.6	7.6	4.8	4.15	4.6
18	4.2	4.6	10.6	5.5	5.6	5.8	6.5	5.9	6.8	4.6	4.2	4.2
19	10.6	5.0	8.8	5.8	5.4	6.0	6.1	5.6	7.1	4.6	4.15	4.12
20	8.8	6.0	7.5	5.6	5.4	5.8	6.0	5.3	7.8	4.4	4.08	4.10
21	7.6	5.8	6.8	7.0	5.2	5.7	5.7	5.2	7.5	4.4	4.02	4.10
22	6.6	6.0	6.2	7.6	5.4	6.7	7.7	5.2	7.4	6.3	4.02	4.4
23	5.9	5.7	6.1	8.1	5.8	9.2	7.8	5.5	6.9	5.7	4.08	4.4
24	5.6	5.6	6.0	6.8	6.0	7.8	6.6	5.5	6.2	5.0	4.02	4.4
25	5.4	5.4	6.2	6.4	6.3	8.6	6.4	5.3	7.0	4.8	3.96	4.2
26	5.2	5.3	7.8	6.2	6.2	10.4	6.7	5.3	6.1	4.7	4.05	4.3
27	5.2	5.2	6.9	6.2	5.9	11.7	6.3	5.1	5.8	4.6	4.6	4.2
28	5.0	5.2	7.4	6.3	5.6	12.2	6.2	5.1	5.6	4.4	4.6	4.12
29	4.9	5.1	7.2	6.2	5.8	9.8	6.0	5.0	5.3	4.4	4.7	4.16
30	5.0	5.0	7.0	7.2	-------	8.0	5.8	5.0	5.2	4.2	4.4	4.3
31	4.9	-------	6.6	7.9	-------	8.4	-------	5.1	-------	4.2	4.2	-------

NOTE.—*River frozen March 6 to 8, 1916, inclusive.

Daily Discharge, in Second-feet, of West Branch Susquehanna River at Bower, Clearfield County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	81	159	180	876	3,080	366	2,250	456	159	231	93	62
2	456	141	204	7,480	1,890	324	2,520	366	141	204	81	366
3	508	123	159	5,190	1,380	288	1,790	324	10,400	180	66	141
4	159	107	141	2,380	876	324	1,380	456	4,080	159	59	93
5	408	123	123	1,580	744	288	1,030	366	1,790	159	57	71
6	288	123	123	2,520	619	*200	810	324	948	141	68	81
7	180	123	141	1,380	948	450	681	288	948	123	59	81
8	123	107	123	810	324	950	508	324	1,190	123	93	81
9	141	93	123	619	508	1,030	456	324	948	93	71	81
10	107	107	81	619	508	876	508	258	1,100	180	69	71
11	107	93	123	681	363	508	876	231	1,190	141	68	67
12	93	93	141	1,030	408	324	1,030	204	876	107	324	60
13	81	107	141	2,520	744	508	810	180	681	107	141	57
14	81	93	123	1,790	408	1,790	3,550	180	508	744	93	61
15	81	107	123	1,190	456	948	3,550	159	508	231	71	123
16	81	258	159	744	508	619	2,010	288	1,890	159	62	141
17	81	159	204	324	456	562	1,380	1,030	2,010	159	63	123
18	71	123	7,060	366	408	508	948	562	1,190	123	71	71
19	7,060	204	3,720	508	324	619	681	408	1,480	123	63	64
20	3,720	619	1,890	408	324	508	619	288	2,250	93	61	62
21	2,010	508	1,190	1,380	258	456	456	258	1,890	93	57	62
22	1,030	619	744	2,010	324	1,100	2,130	258	1,790	810	57	93
23	562	456	681	2,630	508	4,450	2,250	366	1,280	456	61	93
24	408	408	619	1,190	619	2,250	1,030	366	744	204	57	93
25	324	324	744	876	810	3,390	876	288	1,380	159	54	71
26	258	288	2,250	744	744	6,690	1,100	288	681	141	59	81
27	258	258	1,280	744	562	9,200	810	231	508	123	123	71
28	204	258	1,790	810	408	10,200	744	231	408	93	123	64
29	180	231	1,580	744	508	5,560	619	204	288	93	141	67
30	204	204	1,380	1,580	-------	4,080	508	204	258	71	93	81
31	180	-------	1,030	2,380	-------	3,080	-------	231	-------	71	71	-------

NOTES.—*River frozen March 6 to 8, 1916, inclusive, and discharge estimated from climatological data. Discharges above 4,080 second-feet are estimated.

Estimated Monthly Discharge of West Branch Susquehanna River at Bower, Clearfield County

(Drainage area, 320 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	††7,060	71	630	1.97	2.27
November	619	93	221	0.69	0.77
December	††7,060	81	915	2.86	3.30
1916					
January	††7,480	324	1,550	4.84	5.58
February	3,080	258	690	2.16	2.33
March	††10,200	----------	2,010	6.28	7.24
April	3,550	456	1,260	3.94	4.40
May	1,030	159	321	1.00	1.15
June	††10,400	141	1,450	4.53	5.05
July	810	71	190	0.59	0.68
August	324	54	85	0.27	0.31
September	366	57	91	0.28	0.31
The year	††10,400	54	786	2.46	33.39

NOTES.—River frozen March 6 to 8, 1916, inclusive, and discharge estimated from climatological data. ††Estimated.

SUSQUEHANNA BASIN—STATION NO. 14

WEST BRANCH SUSQUEHANNA RIVER AT CLEARFIELD

DESCRIPTION OF STATION

Location.—At two span, steel, through truss, highway bridge at Market Street, Clearfield, Clearfield County.

Records Available.—Gage heights from October 2, 1913, to September 30, 1916. For other records on this river see West Branch Susquehanna River at Bower, West Branch Susquehanna River at Renovo, West Branch Susquehanna River at Williamsport and West Branch Susquehanna River at Lewisburg; also West Branch Susquehanna River at Allenwood in the 1910-11 Report of the Water Supply Commission.

Drainage Area.—487 square miles.

Gage.—A staff gage, whose elevation of zero is 1,094.8 feet above mean sea level, is located on the downstream side of the pier and is read twice daily by H. P. Bridge.

Channel.—Both banks are high and not subject to overflow.

Remarks.—The U. S. Weather Bureau has observed gage heights at this station since May 1, 1902.

Daily Mean Gage Heights, in feet, of West Branch Susquehanna River at Clearfield, Clearfield County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	0.8	1.2	1.3	2.1	3.6	-------	3.6	1.8	1.4	1.1	0.5	0.6
2	1.4	1.2	1.3	‡5.0	3.2	-------	3.6	1.8	1.3	1.0	0.5	0.4
3	1.6	1.2	1.3	5.4	2.6	-------	3.2	1.6	§5.7	1.0	0.5	1.2
4	1.4	1.1	1.3	3.7	2.3	-------	2.8	1.6	5.3	1.0	0.5	0.9
5	1.3	1.1	*	3.0	2.2	-------	2.4	1.6	3.3	1.0	0.4	0.5
6	1.5	1.0	-------	3.8	2.0	-------	2.2	1.6	2.4	1.0	0.8	0.3
7	1.5	1.0	-------	3.0	2.0	-------	2.0	1.5	2.4	1.0	0.5	0.3
8	1.4	1.0	-------	2.4	*	-------	1.9	1.5	2.7	1.0	0.5	0.2
9	1.3	1.0	-------	2.0	-------	-------	1.9	1.5	2.5	0.9	0.6	0.3
10	1.2	1.0	-------	2.0	-------	-------	1.9	1.4	2.6	0.8	0.6	0.3
11	1.2	1.0	-------	2.2	-------	-------	1.9	1.4	2.6	1.2	0.5	0.3
12	1.0	1.0	-------	2.2	-------	-------	2.1	1.3	2.4	1.0	0.9	0.2
13	1.0	1.0	-------	3.2	-------	-------	2.2	1.3	2.2	0.9	0.9	0.2
14	1.0	1.0	-------	3.2	-------	-------	3.0	1.2	2.0	1.9	0.8	0.1
15	1.0	1.0	-------	2.5	-------	-------	4.4	1.1	1.9	1.6	0.6	0.1
16	0.9	1.0	-------	2.3	-------	-------	3.3	1.5	2.7	1.3	0.4	0.1
17	0.9	1.3	-------	2.2	-------	-------	2.7	2.2	3.3	1.2	0.3	0.8
18	0.8	1.2	4.1	*	-------	-------	2.4	2.0	2.8	1.0	0.3	0.6
19	†4.3	1.1	4.2	-------	-------	-------	2.2	1.8	2.6	1.0	0.3	0.4
20	4.4	1.8	3.2	-------	-------	-------	2.0	1.6	3.4	0.9	0.3	0.2
21	3.0	1.8	2.6	-------	-------	-------	2.0	1.4	2.8	0.9	0.3	0.1
22	2.3	1.8	2.4	-------	-------	-------	2.8	1.4	3.1	0.9	0.3	0.4
23	2.0	1.8	2.2	3.4	-------	-------	2.8	1.6	2.5	1.6	1.0	0.4
24	1.7	1.7	1.9	2.6	-------	3.4	2.4	1.7	2.2	1.4	0.7	0.5
25	1.6	1.6	1.8	2.2	-------	3.0	2.3	1.6	2.6	1.1	0.4	0.4
26	1.4	1.4	3.2	2.1	-------	5.2	2.4	1.5	2.2	1.0	0.3	0.4
27	1.5	1.5	2.6	2.1	-------	7.4	2.2	1.4	2.0	1.0	0.3	0.3
28	1.5	1.5	2.5	2.1	-------	8.2	2.2	1.4	1.8	0.8	0.7	0.3
29	1.4	1.4	2.9	2.1	-------	6.9	2.0	1.4	1.4	0.8	1.0	0.4
30	1.3	1.4	2.7	2.3	-------	4.8	1.8	1.4	1.2	0.7	0.8	0.4
31	1.3	-------	2.4	3.6	-------	4.4	-------	1.4	-------	0.6	0.6	-------

NOTES.—*River frozen December 5 to 17, 1915, January 18 to 22, and February 8 to March 23, 1916, inclusive. †Maximum 5.8 feet estimated at 8 p. m. ‡Maximum 6.6 feet at 5 p. m. §Maximum 7.8 feet at 8 p. m.

SUSQUEHANNA BASIN—STATION NO. 15

CLEARFIELD CREEK AT DIMELING

DESCRIPTION OF STATION

Location.—At single span, steel, through truss, highway bridge at Dimeling, Clearfield County.

Records Available.—Discharge complete from October 2, 1913, to September 30, 1916.

Drainage Area.—370 square miles.

Gage.—A standard chain gage, whose elevation of zero is 1,145.556 feet above mean sea level, is located on the upstream side of the bridge and is read twice daily by G. S. Stover.

Channel.—The right bank is low and subject to overflow at extreme stages, the left bank is high and not subject to overflow, and the bed is composed of gravel.

Remarks.—Little Clearfield Creek enters about 400 feet upstream.

Discharge Measurements of Clearfield Creek at Dimeling, Clearfield County

(Drainage area, 370 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
12	Mar. 28	Wilson	1,373	12.12	10,025	Surface method
13	Mar. 28	Wilson	1,352	12.00	9,878	Surface method
14	Mar. 29	Wilson	1,093	10.35	6,423	Surface method
15	Mar. 29	Wilson	1,031	10.00	5,775	Surface method
16	Mar. 29	Wilson	1,002	9.78	5,436	Surface method
17	Mar. 30	Wilson	937	9.15	4,480	Surface method
18	Mar. 30	Wilson	922	9.02	4,178	0.6 method
19	Mar. 31	Wilson	796	8.38	3,153	0.2 & 0.8 method
20	Aug. 15	Wilson & Brown	120	3.79	84	0.6 method

Daily Mean Gage Heights, in feet, of Clearfield Creek at Dimeling, Clearfield County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	4.1	4.4	4.4	6.7	7.5	-------	7.6	5.5	4.6	5.0	3.92	3.70
2	4.9	4.4	4.4	9.0	7.0	-------	7.3	5.4	4.4	4.9	3.90	3.82
3	4.8	4.4	4.4	9.3	6.4	-------	7.0	5.2	11.5	5.8	3.86	3.74
4	4.6	4.4	4.4	7.8	6.0	-------	6.7	5.1	9.5	5.7	3.98	3.76
5	5.0	4.4	4.4	6.9	5.8	-------	6.4	5.0	7.0	5.5	3.83	3.67
6	4.9	4.4	4.3	7.2	5.9	-------	6.1	4.9	6.3	5.5	3.85	3.68
7	4.6	4.4	4.3	6.2	5.7	-------	5.9	††5.0	6.6	5.2	3.82	3.90
8	4.4	4.4	4.2	5.6	5.2	-------	5.8	5.0	6.5	5.1	3.84	4.0
9	4.3	4.4	4.2	5.4	5.2	-------	*	4.9	6.0	5.0	3.83	4.0
10	4.2	4.4	4.2	5.8	5.2	-------	-------	4.9	6.3	4.9	3.76	3.84
11	4.1	4.4	4.2	6.5	5.2	-------	-------	4.8	6.6	4.7	3.88	3.86
12	4.1	4.4	*	6.5	5.5	-------	-------	4.7	6.2	4.5	4.7	3.72
13	4.0	4.4	-------	7.3	5.4	-------	-------	4.6	5.9	4.3	4.5	3.69
14	4.0	4.4	-------	6.5	5.4	-------	8.2	4.5	5.6	4.6	4.3	3.70
15	4.0	4.4	-------	5.7	5.3	-------	8.7	4.5	5.5	4.4	4.0	3.63
16	3.98	5.2	-------	5.8	5.3	-------	7.9	4.8	7.2	4.3	4.2	3.88
17	3.96	5.0	-------	5.3	5.2	-------	7.3	7.4	10.2	4.1	4.0	3.90
18	4.0	4.8	9.2	*	5.1	-------	6.3	6.3	9.1	4.2	4.0	3.82
19	8.0	4.9	7.8	-------	5.1	-------	5.9	5.8	7.6	4.1	4.0	3.75
20	7.6	7.0	6.9	-------	6.2	-------	5.7	5.5	8.0	3.94	3.90	3.60
21	6.6	6.0	6.3	-------	*	-------	5.5	5.3	7.2	3.98	4.0	3.65
22	5.9	6.0	5.8	9.3	-------	-------	7.2	5.2	7.3	4.9	4.0	3.86
23	5.4	5.9	5.4	8.7	-------	-------	6.8	5.4	6.5	4.8	4.0	3.86
24	5.2	5.1	5.5	6.7	-------	13.5	6.4	5.2	6.1	4.3	4.0	3.74
25	5.0	5.0	5.6	5.8	-------	7.9	6.1	5.0	6.0	4.2	3.90	3.58
26	4.9	4.9	6.7	5.7	-------	7.8	6.6	4.9	5.9	4.4	4.0	3.66
27	4.8	4.8	6.4	5.8	-------	11.4	6.3	4.8	5.6	4.6	3.89	3.60
28	4.7	4.7	6.4	6.0	-------	12.1	6.1	4.8	6.9	4.3	3.86	3.56
29	4.6	4.7	6.4	5.9	-------	10.2	5.8	4.7	5.8	4.2	4.2	3.64
30	4.6	4.6	6.4	7.0	-------	9.0	5.6	4.7	5.3	3.98	3.92	3.85
31	4.5	-------	6.5	7.7	-------	8.3	-------	4.7	-------	3.95	3.79	-------

NOTES.—*Creek frozen December 12 to 17, 1915, January 18 to 21, and February 21 to March 23, 1916, inclusive. ††Estimated.

Daily Discharge, in Second-feet, of Clearfield Creek at Dimeling, Clearfield County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	126	187	187	1,420	2,220	975	2,320	620	240	375	96	65
2	335	187	187	4,140	1,700	1,050	2,000	565	187	335	93	81
3	300	187	187	4,600	1,180	1,000	1,700	465	8,790	790	87	70
4	240	187	187	2,560	915	980	1,420	420	4,920	730	106	73
5	375	187	187	1,600	790	965	1,180	375	1,700	620	82	61
6	335	187	165	1,900	850	950	980	335	1,120	620	86	63
7	240	187	165	1,040	730	1,050	850	375	1,340	465	81	93
8	187	187	144	675	465	1,025	790	375	1,260	420	84	109
9	165	187	144	565	465	1,000	††790	335	915	375	82	109
10	144	187	144	790	465	900	††790	335	1,120	335	73	84
11	126	187	144	1,260	485	880	††790	300	1,340	270	90	87
12	126	187	*80	1,260	620	880	††790	270	1,040	212	270	68
13	109	187	75	2,600	565	950	††790	240	850	165	212	64
14	109	187	70	1,260	565	1,000	3,040	212	675	240	165	65
15	109	187	65	730	515	900	3,720	212	620	187	109	60
16	108	465	65	790	515	880	2,680	300	1,900	165	144	90
17	103	375	190	515	465	820	2,000	2,100	6,180	126	109	93
18	109	300	4,440	*345	420	800	1,120	1,120	4,300	144	109	81
19	2,800	335	2,560	620	420	800	850	790	2,320	126	109	72
20	2,320	1,700	1,600	1,130	1,040	800	730	620	2,800	99	93	53
21	1,340	915	1,120	2,100	*1,050	820	620	515	1,900	106	109	59
22	850	915	790	4,600	1,000	1,400	1,900	465	2,000	335	109	87
23	565	850	565	3,720	1,050	5,200	1,520	565	1,260	300	109	87
24	465	420	620	1,420	1,250	13,400	1,180	465	980	165	109	70
25	375	375	675	790	1,120	2,680	980	375	915	144	93	51
26	335	335	1,420	730	1,050	2,560	1,340	335	850	187	109	60
27	300	300	1,180	790	1,000	8,580	1,120	300	675	240	92	53
28	270	270	1,180	915	1,000	10,100	980	300	1,600	165	87	49
29	240	270	1,180	850	975	6,180	790	270	790	144	144	58
30	240	240	1,180	1,700	-------	4,140	675	270	515	106	96	86
31	212	-------	1,260	2,440	-------	3,180	-------	270	-------	101	77	-------

NOTES.—*Creek frozen December 12 to 17, 1915, January 18 to 21, and February 21 to March 23, 1916, inclusive, and discharge estimated from climatological data. Discharge above 11,000 second-feet is estimated. ††Estimated.

Estimated Monthly Discharge of Clearfield Creek at Dimeling, Clearfield County

(Drainage area, 370 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	2,800	103	441	1.19	1.37
November	1,700	187	362	0.98	1.09
December	4,440	----------	715	1.93	2.22
1916					
January	4,600	----------	1,590	4.30	4.96
February	2,220	420	857	2.31	2.49
March	††13,400	----------	2,480	6.70	7.72
April	3,720	620	1,350	3.65	4.07
May	2,100	212	468	1.26	1.45
June	8,790	187	1,840	4.97	5.54
July	790	99	284	0.77	0.89
August	270	73	110	0.30	0.35
September	109	49	73	0.20	0.22
The year	††13,400	49	880	2.38	32.37

NOTES—Creek frozen December 12 to 17, 1915, January 18 to 21, and February 21 to March 23, 1916, inclusive, and discharge estimated from climatological data. ††Estimated.

SUSQUEHANNA BASIN—STATION NO. 16

MOSHANNON CREEK AT WINBURNE

DESCRIPTION OF STATION

Location.—At single span, steel, through truss, highway bridge at Winburne, Clearfield County.

Records Available.—Discharge measurements and gage heights from October 3, 1913, to September 30, 1916.

Drainage Area.—150 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the downstream side of the bridge and is read twice daily by W. M. Hoover.

Channel.—The right bank is high, the left bank is low and subject to overflow at extreme stages, and the bed is composed of gravel.

Discharge Measurements of Moshannon Creek at Winburne, Clearfield County

(Drainage area, 150 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
10	Mar. 30	Wilson	503	4.47	2,365	0.6 method
11	Mar. 31	Wilson	404	3.58	1,626	0.6 method
12	Aug. 15	Wilson & Brown	74	0.64	72	0.6 method

Daily Mean Gage Heights, in feet, of Moshannon Creek at Winburne, Clearfield County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	0.66	0.80	0.80	1.5	1.4	1.0	3.0	1.4	0.90	1.1	0.65	0.60
2	0.66	0.78	0.80	1.9	1.5	0.99	2.7	1.3	0.85	1.0	0.65	0.60
3	0.63	0.75	0.80	3.0	1.6	0.96	2.5	1.2	4.2	1.0	0.65	0.60
4	0.60	0.75	0.80	2.9	1.6	0.95	2.0	1.1	2.8	0.95	0.65	0.60
5	0.68	0.75	0.80	2.3	1.5	0.85	1.7	0.98	2.3	0.82	0.54	0.50
6	0.64	0.75	0.80	2.2	1.5	0.95	1.7	1.0	2.0	0.90	0.60	0.60
7	0.61	0.75	0.76	2.1	1.4	1.7	1.6	1.0	1.8	0.85	0.60	0.60
8	0.60	0.74	0.76	1.7	1.4	1.6	1.5	1.0	1.9	0.85	0.60	0.60
9	0.60	0.73	0.76	1.6	1.3	1.3	1.5	0.98	1.7	0.85	0.60	0.60
10	0.50	0.62	0.69	1.3	1.1	0.98	1.3	0.84	1.6	0.75	0.50	0.50
11	0.60	0.70	0.93	1.4	1.1	1.0	1.6	0.88	1.7	0.85	0.60	0.60
12	0.60	0.70	*1.0	1.4	1.1	0.99	1.5	0.85	1.6	0.85	0.60	0.60
13	0.59	0.65	0.92	1.6	1.1	1.0	1.4	0.84	1.6	0.82	0.60	0.60
14	0.58	0.65	0.96	1.5	1.0	1.4	1.8	0.80	1.5	0.80	0.60	0.60
15	0.57	0.65	1.1	1.4	1.0	1.2	1.8	0.70	1.5	0.64	0.50	0.50
16	0.56	0.65	1.3	1.4	1.3	1.1	2.0	0.80	1.9	0.70	0.62	0.60
17	0.55	0.65	1.0	1.4	1.2	0.99	2.1	0.88	5.0	0.70	0.60	0.60
18	0.55	0.65	2.5	1.4	1.1	1.0	1.9	0.92	5.5	0.70	0.60	0.60
19	1.2	0.67	2.8	1.4	0.99	1.0	1.7	0.90	4.0	0.70	0.60	0.56
20	1.5	0.72	2.0	1.5	0.98	0.88	1.5	0.80	3.5	0.55	0.50	0.42
21	1.2	0.90	1.6	1.6	1.0	1.2	1.6	0.85	3.3	0.65	0.60	0.50
22	1.0	0.95	1.8	1.6	1.1	1.4	1.6	0.88	3.0	0.65	0.60	0.50
23	0.96	0.90	1.5	1.6	1.1	1.5	1.7	1.0	2.4	0.65	0.60	0.50
24	0.92	0.90	1.4	1.4	1.1	1.6	1.7	1.0	2.2	0.65	0.60	0.50
25	0.86	0.88	1.5	1.0	0.98	1.8	1.6	0.90	1.8	0.55	0.50	0.40
26	0.85	0.84	1.5	1.1	1.1	2.8	1.6	1.0	1.8	0.65	0.60	0.50
27	0.85	0.82	1.4	0.99	1.1	4.0	1.6	0.92	1.5	0.65	0.60	0.50
28	0.85	0.80	1.6	0.94	1.0	5.6	1.6	0.90	1.5	0.65	0.64	0.50
29	0.84	0.80	1.7	0.90	0.93	5.7	1.5	0.90	1.3	0.65	0.65	0.56
30	0.72	0.70	1.4	0.96	-------	4.5	1.3	0.82	1.1	0.55	0.55	0.41
31	0.70	-------	1.5	1.2	-------	3.6	-------	0.91	-------	0.65	0.65	-------

NOTE—*Creek frozen December 12 to 17, 1915, inclusive.

SUSQUEHANNA BASIN—STATION NO. 17

DRIFTWOOD BRANCH SINNEMAHONING CREEK AT STERLING RUN

DESCRIPTION OF STATION

Location.—At three span, steel, through truss, highway bridge about 9 miles above the mouth at Sterling Run, Cameron County.

Records Available.—Discharge measurements and gage heights from September 30, 1913, to September 30, 1916.

Drainage Area.—270 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the downstream side of the bridge and is read twice daily by Thomas Eddy.

Channel.—Both banks are low and subject to overflow at extreme stages, and the bed is composed of gravel.

Remarks.—Sterling Run enters the creek about 700 feet below the bridge.

Discharge Measurements of Driftwood Branch Sinnemahoning Creek at Sterling Run, Cameron County

(Drainage area, 270 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
12	Mar. 28	Bronson	1,301	6.32	9,077	Surface method
13	Mar. 28	Bronson	1,337	6.48	9,394	Surface method
14	Mar. 28	Bronson	1,355	6.55	9,710	Surface method
15	Mar. 28	Bronson	1,363	6.60	9,788	Surface method
16	Mar. 29	Bronson	1,146	5.67	7,696	Surface method
17	Mar. 29	Bronson	1,070	5.35	6,976	Surface method
18	Mar. 29	Bronson	984	4.98	6,041	Surface method
19	Mar. 29	Bronson	950	4.84	5,856	0.2 and 0.8 method
20	Mar. 29	Bronson	945	4.82	5,882	Surface method
21	Mar. 30	Bronson	889	4.61	5,273	Surface method
22	Mar. 30	Bronson	848	4.42	4,886	Surface method
23	Mar. 30	Bronson	818	4.29	4,676	Surface method
24	Mar. 30	Bronson	828	4.32	4,499	0.2 and 0.8 method
25	Aug. 10	Wilson & Brown	65	0.67	23	Surface method

Daily Mean Gage Heights, in feet, of Driftwood Branch Sinnemahoning Creek at Sterling Run, Cameron County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	0.99	1.0	1.4	1.7	2.4	1.5	4.3	1.8	1.8	1.2	0.74	0.56
2	1.2	0.96	1.4	3.1	2.4	1.4	4.5	1.7	1.6	1.2	0.70	0.94
3	1.2	1.0	1.3	3.2	2.2	1.4	4.2	1.7	5.0	1.2	0.68	0.76
4	1.2	1.0	1.3	2.4	1.9	1.4	3.8	1.8	4.1	1.1	0.66	0.74
5	2.6	1.0	1.3	2.5	1.7	1.3	2.6	1.7	2.9	1.1	0.74	0.72
6	2.4	1.0	1.2	3.6	1.6	1.3	2.4	1.6	2.3	1.0	0.76	0.70
7	2.0	0.94	1.2	2.8	1.5	1.6	2.2	1.6	2.3	0.96	0.71	0.70
8	1.7	0.94	1.2	2.4	1.4	2.3	2.1	1.6	2.4	0.95	0.70	0.76
9	1.5	0.95	1.2	2.1	1.5	2.0	2.0	1.5	2.4	0.94	0.68	0.67
10	1.4	0.93	1.1	2.0	1.4	1.8	1.9	1.5	2.4	0.94	0.67	0.65
11	1.3	0.94	1.1	1.9	1.4	1.7	1.8	1.4	3.4	0.90	0.65	0.62
12	1.2	0.94	0.96	1.8	1.4	1.7	1.9	1.4	3.1	0.89	0.77	0.60
13	1.2	0.92	1.1	2.6	1.3	1.6	2.1	1.3	2.6	0.92	0.78	0.60
14	1.2	0.91	*1.2	2.2	1.2	1.7	†4.8	1.3	2.2	1.3	0.68	0.69
15	1.1	1.0	1.2	2.1	1.2	1.6	4.0	1.3	2.3	0.99	0.65	1.2
16	1.1	1.1	1.2	2.0	1.3	1.6	3.0	1.5	3.9	0.98	0.61	1.0
17	1.1	1.0	1.2	1.8	1.4	1.6	2.6	2.8	3.8	0.98	0.58	0.84
18	1.0	0.96	2.3	1.7	1.4	1.5	2.2	2.5	3.0	0.94	0.56	0.77
19	1.5	1.3	2.5	1.6	1.4	1.4	2.0	2.1	2.8	0.90	0.55	0.73
20	1.4	2.0	2.2	1.5	1.4	1.4	2.0	1.9	2.9	0.88	0.55	0.70
21	1.3	1.9	2.0	1.9	1.3	1.4	1.8	1.7	2.6	0.89	0.54	0.66
22	1.3	1.9	1.8	2.4	1.3	1.4	3.9	1.8	2.2	1.2	0.51	0.72
23	1.3	1.8	1.8	2.8	1.3	1.4	3.5	3.4	2.0	1.1	0.62	0.78
24	1.2	1.7	1.8	2.5	1.5	1.4	2.9	3.0	1.9	0.92	0.60	0.73
25	1.2	1.7	1.8	2.2	1.7	1.5	2.5	2.5	1.8	0.89	0.57	0.70
26	1.2	1.6	2.5	2.0	1.7	2.1	2.3	2.1	1.6	0.86	0.56	0.65
27	1.2	1.6	2.3	2.0	1.6	4.1	2.2	1.9	1.5	0.85	0.52	0.60
28	1.2	1.5	2.2	2.1	1.6	6.4	2.1	1.8	1.4	0.84	0.51	0.68
29	1.2	1.5	2.1	2.0	1.5	5.2	2.0	1.8	1.3	0.80	0.66	0.79
30	1.1	1.4	2.0	2.1	-------	4.5	2.0	1.9	1.3	0.75	0.64	0.92
31	1.1	-------	1.8	2.1	-------	4.6	-------	1.8	-------	0.73	0.58	-------

NOTES—*Creek frozen December 14 to 18, 1915, inclusive. †Maximum 5.5 feet at 5.40 p. m.

SUSQUEHANNA BASIN—STATION NO. 18

KETTLE CREEK AT LEIDY

DESCRIPTION OF STATION

Location.—At single span, steel, through truss, highway bridge at Leidy, Clinton County, 11 miles above the mouth of the creek.

Records Available.—Discharge measurements and gage heights from December 2, 1913, to September 30, 1916.

Drainage Area.—202 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the upstream side of the bridge and is read twice daily by C. W. Sliker.

Channel.—The right bank is high and steep, the left bank is low with gradual slopes but not subject to overflow, and the bed is composed of clean gravel.

Discharge Measurements of Kettle Creek at Leidy, Clinton County

(Drainage area, 202 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
5	Mar. 31	Bronson	745	6.20	4,291	Surface method
6	Aug. 9	Wilson & Brown	162	1.89	38	0.6 method

Daily Mean Gage Heights, in feet, of Kettle Creek at Leidy, Clinton County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	1.96	2.2	2.4	2.8	3.6	2.8	6.2	3.1	3.1	3.0	1.86	1.78
2	2.3	2.1	2.4	3.6	3.5	2.8	6.3	3.0	3.0	2.8	1.85	2.2
3	2.2	2.1	2.4	4.4	3.4	2.7	5.2	2.9	6.2	2.7	1.84	1.85
4	2.1	2.1	2.4	4.0	3.3	2.7	4.5	2.9	6.2	2.6	1.81	1.76
5	2.0	2.1	2.3	3.8	3.2	2.7	4.1	2.8	4.8	2.4	1.88	1.60
6	2.0	2.1	2.3	4.9	3.0	2.8	3.8	2.8	4.0	2.4	1.87	1.69
7	2.0	2.1	2.3	4.4	2.8	2.9	3.7	2.7	3.9	2.4	1.86	1.65
8	2.0	2.1	2.3	4.0	2.6	3.0	3.6	2.7	4.4	2.3	1.86	2.1
9	2.0	2.0	2.2	3.6	2.6	3.3	3.3	2.7	5.3	2.3	1.88	1.95
10	2.1	2.2	2.3	3.3	2.6	3.4	3.0	2.5	5.0	2.2	1.72	1.72
11	1.98	2.0	2.1	3.2	2.5	3.4	3.1	2.6	4.6	2.2	1.82	1.78
12	1.98	2.0	2.1	3.2	2.5	3.3	3.2	2.5	4.4	2.2	1.88	1.72
13	1.96	2.0	2.2	3.1	2.4	3.2	3.6	2.5	4.1	2.3	1.85	1.69
14	1.96	2.0	2.2	3.0	*2.8	3.5	6.2	2.4	3.7	2.5	1.82	1.66
15	2.0	2.1	2.4	2.8	3.5	3.4	5.9	2.4	3.4	2.2	1.68	1.96
16	2.0	2.1	3.2	3.0	3.5	3.4	4.8	2.4	4.7	2.2	1.77	2.1
17	2.0	2.1	3.2	2.8	3.4	3.4	4.3	3.0	†8.8	2.1	1.76	1.95
18	1.98	2.1	3.5	2.7	3.3	3.4	3.8	3.1	6.1	2.1	1.75	1.82
19	2.7	2.2	*3.5	2.6	3.2	3.3	3.6	3.1	5.1	2.1	1.74	1.79
20	3.1	3.2	3.4	2.6	3.1	3.3	3.2	2.9	4.9	1.92	1.62	1.62
21	2.9	3.2	3.5	3.0	3.0	3.3	3.2	2.9	4.6	2.1	1.70	1.66
22	2.7	3.1	3.7	3.4	3.0	3.3	5.2	2.8	4.1	2.2	1.68	1.60
23	2.7	3.0	3.3	4.0	3.0	3.3	5.2	3.7	3.8	2.1	1.65	1.72
24	2.6	2.8	3.1	3.8	2.9	3.3	4.4	4.0	3.5	1.98	1.81	1.69
25	2.6	2.8	3.0	3.6	2.8	3.4	4.1	3.8	3.2	1.86	1.65	1.56
26	2.5	2.7	3.4	3.4	2.8	4.2	3.7	3.4	3.0	1.94	1.73	1.64
27	2.4	2.7	3.6	3.4	2.8	6.1	3.5	3.2	2.9	1.94	1.68	1.62
28	2.3	2.6	3.4	3.4	2.7	7.0	3.3	3.1	4.2	1.92	1.81	1.61
29	2.3	2.6	3.2	3.5	2.8	6.7	3.2	3.0	3.6	1.90	1.78	1.88
30	2.3	2.6	3.2	3.4	-------	6.2	3.1	3.0	3.2	1.78	1.64	2.2
31	2.2	-------	2.9	3.3	-------	6.5	-------	3.1	-------	1.88	1.70	-------

NOTES—*Creek frozen December 19 to 26, 1915, and February 14 to March 27, 1916, inclusive. †Maximum 10.4 feet at 8 a. m.

SUSQUEHANNA BASIN—STATION NO. 19

WEST BRANCH SUSQUEHANNA RIVER AT RENOVO

DESCRIPTION OF STATION

Location.—At three span, steel, through truss, highway bridge at Eighth Street, Renovo, Clinton County.

Records Available.—Discharge complete from January 1, 1908, to September 30, 1915, and discharge measurements and gage heights from October 1, 1915, to September 30, 1916. For other records on this river see West Branch Susquehanna River at Bower, West Branch Susquehanna River at Clearfield, West Branch Susquehanna River at Williamsport and West Branch Susquehanna River at Lewisburg; also West Branch Susquehanna River at Allenwood in the 1910-11 Report of the Water Supply Commission.

Drainage Area.—2,990 square miles.

Gage.—A standard chain gage, whose elevation of zero is 637.4 feet above mean sea level, is located on the upstream side of the bridge and is read twice daily by Chidwick Walsh.

Channel.—Both banks are high and not subject to overflow, and the bed is composed of rock.

Discharge Measurements of West Branch Susquehanna River at Renovo, Clinton County

(Drainage area, 2,990 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
24	Mar. 29	Batley & Nugent	8,115	14.43	73,319	Surface method
25	Mar. 29	Batley & Nugent	7,903	14.01	70,753	Surface method
26	Mar. 29	Batley & Nugent	7,580	13.29	64,642	Surface method
27	Mar. 29	Batley & Nugent	7,345	12.77	62,154	Surface method
28	Mar. 30	Batley & Nugent	6,720	11.52	50,540	Surface method
29	Aug. 9	Wilson & Brown	1,569	0.20	615	Surface and 0.6 method

Daily Mean Gage Heights, in feet, of West Branch Susquehanna River at Renovo, Clinton County, for the year ending September 30, 1916.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	0.3	1.2	1.5	3.2	5.2	2.4	10.1	3.3	2.6	2.3	0.1	0.0
2	0.6	1.1	1.4	4.0	5.5	2.6	9.5	3.0	2.4	2.0	0.1	—0.13
3	1.2	1.0	1.3	8.9	4.8	2.4	8.1	2.8	9.6	1.9	—0.01	—0.19
4	1.5	0.9	1.3	7.1	4.2	2.0	6.4	2.8	11.0	1.8	—0.05	—0.14
5	1.2	0.9	1.2	5.7	3.5	1.8	5.6	2.7	7.5	1.5	0.2	—0.03
6	2.2	0.8	1.1	7.2	3.3	2.0	4.9	2.5	5.7	1.3	0.3	—0.01
7	2.1	0.8	1.0	6.8	3.1	1.4	4.4	2.4	4.8	1.1	0.1	0.1
8	1.8	0.7	1.0	5.3	3.0	3.3	4.0	2.3	5.4	1.0	0.00	—0.02
9	1.5	0.8	1.0	4.3	2.7	5.5	3.8	2.3	5.6	0.9	0.1	—0.08
10	1.2	0.9	0.9	3.8	2.6	5.4	3.6	2.1	5.5	1.0	0.1	—0.12
11	1.1	0.7	*0.9	3.6	2.3	4.3	3.5	2.0	6.0	0.9	0.1	—0.17
12	0.9	0.6	1.9	3.5	2.2	3.5	3.8	1.8	6.0	0.8	0.1	—0.22
13	0.8	0.6	2.0	3.8	2.1	3.2	4.1	1.7	5.1	0.8	0.3	—0.30
14	0.7	0.6	3.6	4.8	*1.8	4.1	8.0	1.5	4.7	1.0	0.3	—0.28
15	0.7	‖0.7	3.3	4.0	2.6	4.5	9.7	1.5	5.4	1.3	0.3	—0.26
16	0.6	0.8	3.1	3.6	2.3	3.9	7.5	1.5	6.3	1.2	0.1	0.1
17	0.5	0.8	3.5	3.2	2.4	3.7	6.0	3.9	†13.9	0.9	0.0	0.1
18	0.5	1.0	4.4	*3.1	2.6	3.2	5.0	4.5	9.6	0.8	0.0	—0.04
19	2.2	1.1	6.6	3.1	2.2	3.0	4.2	3.8	7.4	0.6	0.0	—0.04
20	6.2	2.2	5.0	3.0	1.8	2.7	3.9	3.2	7.2	0.5	0.0	—0.14
21	4.6	3.2	3.9	3.2	1.7	2.6	3.7	2.8	6.3	0.5	0.0	—0.24
22	3.6	2.9	3.3	4.0	1.6	2.8	6.7	2.4	5.8	0.6	—0.33	—0.02
23	3.0	2.8	3.0	5.5	1.8	3.0	7.6	3.8	5.1	0.9	—0.32	—0.12
24	2.6	2.6	2.8	4.9	1.9	9.5	6.2	4.7	4.3	1.2	—0.41	—0.09
25	2.2	2.4	2.6	4.1	2.5	8.6	5.3	4.1	4.2	0.9	—0.36	—0.10
26	2.0	2.2	3.9	3.6	3.6	9.1	4.8	3.5	4.0	0.7	—0.24	—0.14
27	1.8	2.0	4.5	3.5	3.6	10.5	4.5	3.1	3.3	0.6	—0.26	—0.19
28	1.7	1.9	4.2	3.6	3.3	15.6	4.2	2.8	3.4	0.6	—0.18	—0.28
29	1.6	1.7	4.3	3.8	2.4	13.6	3.9	2.8	3.1	0.5	—0.06	—0.17
30	1.4	1.7	4.0	3.8	-------	11.3	3.5	3.0	2.7	0.3	0.1	0.1
31	1.3	-------	3.7	4.4	-------	11.1	-------	2.8	-------	0.2	0.1	-------

NOTES.—*River frozen December 11 to 18, 1915, January 18 to 22, and February 14 to March 26, 1916, inclusive. †Maximum 14.5 feet at 12.30 p. m. ‖Interpolated.

SUSQUEHANNA BASIN—STATION NO. 20

BALD EAGLE CREEK AT MILESBURG

DESCRIPTION OF STATION

Location.—At Pennsylvania Railroad Bridge No. 53, over Bald Eagle Creek, 300 yards above the mouth of Spring Creek, at Milesburg, Centre County.

Records Available.—Discharge complete from February 6, 1911, to September 30, 1916. For other records on this creek see Bald Eagle Creek at Beech Creek Station.

Drainage Area.—140 square miles.

Gage.—A 10-foot staff gage, whose elevation of zero is arbitrary, is fastened to the downstream side of the pier and is read twice daily by P. H. Haupt.

Channel.—The right bank is high, steep and rocky, while the left bank is low, although the railroad embankment prevents floods from going around the bridge. The bed is composed of gravel and stones.

Discharge Measurement of Bald Eagle Creek at Milesburg, Centre County

(Drainage area, 140 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
16	Mar. 30	Brown & Heagy	447	3.90	1,955	Surface method

Daily Mean Gage Heights, in feet, of Bald Eagle Creek at Milesburg, Centre County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	0.49	0.44	0.65	1.6	2.7	-------	3.5	1.30	0.79	0.82	0.33	0.05
2	1.01	0.42	0.63	2.7	2.3	-------	2.5	1.24	0.68	0.76	0.28	0.05
3	0.71	0.40	0.66	2.7	2.0	-------	2.2	1.18	5.0	0.78	0.25	0.05
4	0.50	0.40	0.72	2.3	1.7	-------	2.3	1.24	2.7	0.72	0.32	0.05
5	0.36	0.38	0.74	2.0	1.49	-------	2.1	1.15	2.0	0.65	0.34	0.16
6	0.38	0.37	0.68	2.7	1.38	-------	1.9	1.08	1.6	0.60	0.28	0.22
7	0.35	0.35	0.62	2.4	1.32	-------	1.8	1.02	2.9	0.55	0.25	0.14
8	0.30	0.35	*	2.1	1.22	-------	1.7	0.98	3.0	0.48	0.23	0.08
9	0.26	0.35	-------	1.8	1.14	-------	1.8	0.92	3.3	0.42	0.23	0.05
10	0.22	0.38	-------	1.6	1.08	-------	1.8	0.85	3.6	0.35	0.22	0.05
11	0.20	0.43	-------	1.6	1.04	-------	1.9	0.82	3.8	0.33	0.22	0.05
12	0.20	0.35	-------	1.6	1.06	-------	1.9	0.74	2.7	0.32	0.34	0.05
13	0.20	0.28	-------	2.7	1.07	-------	2.1	0.70	2.1	0.38	0.30	0.05
14	0.22	0.32	-------	2.0	*	2.2	3.2	0.67	1.7	0.61	0.25	0.05
15	0.25	0.56	-------	1.48	-------	1.9	2.9	0.65	2.7	0.46	0.18	0.18
16	0.18	0.72	-------	1.22	-------	1.7	2.4	0.79	6.0	0.44	0.15	0.08
17	0.13	0.52	-------	*	-------	1.6	2.0	1.8	‡9.0	0.46	0.13	0.05
18	0.13	0.42	3.2	-------	-------	1.5	1.7	1.34	3.9	0.52	0.10	0.05
19	1.7	1.20	2.5	-------	-------	1.5	1.6	1.22	3.7	0.48	0.08	0.05
20	1.7	1.40	1.7	-------	-------	1.5	1.44	1.12	3.5	0.38	0.06	0.05
21	1.26	1.10	1.41	-------	-------	1.6	1.32	1.02	2.9	0.30	0.05	0.05
22	0.90	0.92	1.28	-------	-------	1.8	3.4	1.08	2.5	0.85	0.05	0.05
23	0.78	0.84	1.18	-------	-------	1.9	2.5	2.9	2.0	0.66	0.12	0.05
24	0.74	0.80	1.06	-------	-------	1.9	2.1	2.3	1.7	0.54	0.12	0.05
25	0.68	0.76	1.5	-------	-------	2.3	1.8	1.9	1.5	0.70	0.10	0.05
26	0.68	0.72	1.49	1.38	-------	4.0	1.8	1.6	1.38	1.22	0.08	0.05
27	0.72	0.70	1.31	1.6	-------	4.7	1.7	1.35	1.28	0.68	0.05	0.05
28	0.62	0.67	1.9	1.7	-------	†6.6	1.6	1.22	1.18	0.44	0.30	0.05
29	0.58	0.66	1.8	1.7	-------	5.0	1.48	1.18	1.05	0.36	0.22	1.48
30	0.54	0.65	1.7	2.4	-------	4.2	1.38	1.12	0.92	0.34	0.12	1.28
31	0.48	-------	1.6	2.4	-------	4.0	-------	0.95	-------	0.30	0.06	-------

NOTES—*Creek frozen December 8 to 17, 1915, January 17 to 25, and February 14 to March 13, 1916, inclusive. †Maximum 7.5 feet at 3 a. m. ‡Maximum 11.5 feet at 6 a. m.

Daily Discharge, in Second-feet, of Bald Eagle Creek at Milesburg, Centre County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	29	25	45	225	770	36	1,590	145	61	65	17	4
2	90	24	43	770	525	36	640	133	48	57	14	4
3	51	22	46	770	375	34	470	121	3,900	60	12	4
4	30	22	52	525	260	34	525	133	770	52	16	4
5	19	21	55	375	192	32	420	115	375	45	18	8
6	21	20	48	770	165	32	335	102	225	40	14	11
7	18	18	42	580	150	30	295	91	920	35	12	7
8	15	18	*20	420	129	30	260	85	1,010	28	12	5
9	13	18	18	295	113	40	295	78	1,340	24	12	4
10	11	21	18	225	102	40	295	68	1,720	18	11	4
11	10	24	17	225	95	40	335	65	1,990	17	11	4
12	10	18	17	225	98	50	335	55	770	16	18	4
13	10	14	16	770	100	350	420	50	420	21	15	4
14	11	16	16	375	*42	470	1,220	47	260	41	12	4
15	12	36	15	190	42	335	920	45	770	27	9	9
16	9	52	20	129	42	260	580	61	5,700	25	8	5
17	6	32	25	*80	45	225	375	295	‡11,800	27	6	4
18	6	24	1,220	45	45	195	260	155	2,130	32	5	4
19	260	125	640	45	40	195	225	129	1,850	28	5	4
20	260	170	260	50	40	195	180	109	1,590	21	4	4
21	137	105	172	100	40	225	150	91	920	15	4	4
22	75	78	141	170	40	295	1,460	102	640	68	4	4
23	60	67	121	240	42	335	640	920	375	46	6	4
24	55	62	98	240	42	335	420	525	260	34	6	4
25	48	57	195	240	40	525	295	335	195	50	5	4
26	48	52	192	165	40	2,280	295	225	165	129	5	4
27	52	50	148	225	40	3,390	260	158	141	48	4	4
28	42	47	335	260	38	†6,980	225	129	121	25	15	4
29	38	46	295	260	38	3,900	190	121	96	19	11	190
30	34	45	260	580	-------	2,580	165	109	78	18	6	141
31	28	-------	225	580	-------	2,280	-------	82	-------	15	4	-------

NOTES—*Creek frozen December 8 to 17, 1915, January 17 to 25, and February 14 to March 13, 1916, inclusive, and discharge estimated from climatological data †Maximum=8,770 second-feet. ‡Maximum=17,000 second-feet. Discharges above 3,900 second-feet are estimated.

Estimated Monthly Discharge of Bald Eagle Creek at Milesburg, Centre County

(Drainage area, 140 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	260	6	49	0.35	0.40
November	170	14	44	0.31	0.35
December	1,220	----------	155	1.11	1.28
1916					
January	770	----------	327	2.34	2.70
February	770	----------	129	0.92	0.99
March	††8,770	----------	832	5.94	6.85
April	1,590	150	469	3.35	3.74
May	920	45	157	1.12	1.29
June	††17,000	48	1,350	9.64	10.76
July	129	15	37	0.26	0.30
August	18	4	10	0.07	0.08
September	190	4	15	0.11	0.12
The year	††17,000	4	297	2.12	28.86

NOTES—Creek frozen December 8 to 17, 1915, January 17 to 25, and February 14 to March 13, 1916, inclusive, and discharge estimated from climatological data. ††Estimated.

SUSQUEHANNA BASIN—STATION NO. 21

SPRING CREEK NEAR BELLEFONTE

DESCRIPTION OF STATION

Location.—At single span, steel, through truss, highway bridge one mile below Bellefonte, Centre County.

Records Available.—Discharge complete from February 7, 1911, to September 11, 1915, and discharge measurements and gage heights from September 12, 1915, to September 30, 1916.

Drainage Area.—145 square miles.

Gage.—A staff gage, whose elevation of zero is arbitrary, is located on the downstream side of the left abutment and is read twice daily by J. H. Oliger.

Channel.—Both banks are flat and overflow during extreme stages, and the bed is composed of gravel and stone.

Remarks.—There is a canal about 300 feet east of the creek proper which carries a small part of the flow of the stream, most of which is leakage through the head-gates.

Discharge Measurements of Spring Creek near Bellefonte, Centre County

(Drainage area, 145 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks	
	1916		Sq. ft.	Feet	Sec.-ft.		
12	Mar. 30	Brown & Heagy	285	3.66	877	Surface method.	Creek proper
	Mar. 30	Brown & Heagy	48	2.00	34	Surface method.	Canal
13	Mar. 30	Brown & Heagy	285	3.68	946	Surface method.	Creek proper
	Mar. 30	Brown & Heagy	48	2.00	36	Surface method.	Canal
14	Aug. 17	Wilson & Brown	141	1.75	157	0.6 method.	Creek proper
	Aug. 17	Wilson & Brown	43	1.65	21	Surface method.	Canal

Daily Mean Gage Heights, in feet, of Spring Creek near Bellefonte, Centre County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	2.0	2.0	2.1	1.88	2.3	1.78	3.4	2.2	1.90	2.3	1.75	1.72
2	2.1	2.0	2.0	†3.0	2.3	1.88	3.3	2.5	1.90	2.3	1.75	1.70
3	2.0	2.1	1.99	2.5	2.2	1.81	3.3	2.1	2.7	2.3	1.75	1.70
4	2.1	2.1	1.98	2.4	2.0	1.75	3.0	2.1	2.4	2.2	1.75	1.68
5	2.1	2.2	1.92	2.3	2.0	1.75	2.8	2.0	2.3	2.2	1.75	1.65
6	2.1	2.0	2.0	2.4	2.0	1.87	2.7	2.0	2.2	2.1	1.72	1.66
7	2.0	1.98	2.1	2.2	2.1	1.81	2.6	2.1	2.2	2.1	1.72	1.65
8	1.99	1.96	2.1	2.2	1.92	1.92	2.6	2.0	2.4	2.1	1.72	1.64
9	1.99	2.0	2.0	2.1	2.0	1.86	2.6	2.0	2.9	2.1	1.71	1.62
10	2.0	2.0	2.0	2.0	2.0	1.82	2.5	2.0	2.6	2.0	1.70	1.60
11	1.98	2.0	1.98	2.1	1.98	1.78	2.5	1.96	2.2	2.0	1.70	1.68
12	2.0	2.0	1.89	2.3	1.95	1.85	2.5	1.95	2.6	1.99	1.70	1.66
13	2.0	2.1	1.96	2.7	1.97	2.5	2.4	1.94	2.7	2.2	1.70	1.64
14	2.0	2.0	1.99	2.1	1.86	2.4	2.8	1.92	2.6	2.0	1.71	1.65
15	2.0	2.1	2.0	2.0	1.90	2.1	2.8	1.90	2.7	1.96	1.69	1.72
16	2.0	2.2	2.0	2.0	1.88	2.1	2.7	1.99	2.9	1.95	1.67	1.66
17	2.0	2.0	2.2	1.88	1.92	1.88	2.6	1.98	5.0	1.97	1.70	1.65
18	1.98	2.3	**2.3	1.81	1.95	1.92	2.5	1.90	4.0	1.95	1.72	1.65
19	2.3	2.2	2.0	1.85	1.78	1.9	2.5	1.88	4.0	1.91	1.75	1.65
20	2.2	2.0	1.88	1.92	1.82	1.9	2.4	1.88	3.6	1.90	1.75	1.65
21	2.1	2.0	1.82	2.0	1.78	1.85	2.4	1.85	3.4	1.86	1.75	1.65
22	2.1	2.0	1.78	2.1	1.78	1.85	2.8	1.85	3.3	1.94	1.75	1.65
23	2.1	2.0	1.81	1.99	1.95	1.88	2.7	2.1	2.9	1.89	1.75	1.62
24	1.99	2.0	1.82	1.94	1.96	1.95	2.7	2.1	2.9	1.86	1.75	1.61
25	2.0	2.0	1.80	1.91	1.91	2.2	2.6	1.98	2.8	1.86	1.74	1.62
26	2.1	2.0	1.98	1.92	1.90	3.7	2.5	1.96	2.7	1.92	1.72	1.62
27	2.2	2.0	1.90	1.96	1.84	3.5	2.4	1.92	2.6	1.82	1.72	1.65
28	2.0	1.98	1.95	2.0	1.80	3.8	2.4	1.92	2.6	1.81	1.78	1.65
29	2.0	2.2	1.91	1.91	1.82	4.0	2.4	1.90	2.5	1.80	1.72	1.84
30	2.1	2.1	1.86	1.94	-------	3.7	2.3	1.90	2.4	1.81	1.70	1.69
31	1.99	-------	1.85	2.2	-------	3.6	-------	1.90	-------	1.76	1.71	-------

NOTES**Cofferdam for new pier washed out. †Maximum 4.0 feet at 5 p. m.

SUSQUEHANNA BASIN—STATION NO. 22

BALD EAGLE CREEK AT BEECH CREEK

DESCRIPTION OF STATION

Location.—At three span, steel, highway bridge at Beech Creek Station, Clinton County.

Records Available.—Discharge complete from June 24, 1910, to September 30, 1916. For other records on this creek see Bald Eagle Creek at Milesburg.

Drainage Area.—565 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the upstream side of the bridge and is read twice daily by G. A. Rodgers.

Channel.—The right bank is about 35 feet above the bed of the creek, while the left bank is about 8 to 10 feet above the bed, which is composed of rocks, gravel and sand.

Discharge Measurements of Bald Eagle Creek at Beech Creek, Clinton County

(Drainage area, 565 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
22	Mar. 29	Brown & Heagy	1,984	8.57	9,612	Surface method
23	Mar. 29	Brown & Heagy	1,883	8.18	8,591	Surface method
24	Aug. 16	Wilson & Brown	402	1.70	220	0.6 method

Daily Mean Gage Heights, in feet, of Bald Eagle Creek at Beech Creek, Clinton County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	1.66	1.84	1.87	2.6	3.9	-------	6.5	2.8	2.4	2.6	1.83	1.62
2	1.80	1.73	1.80	3.8	3.5	-------	5.6	2.7	2.4	2.6	1.82	1.60
3	‖1.77	1.78	1.86	4.4	3.3	-------	4.8	2.6	9.0	2.4	1.80	1.59
4	1.74	1.72	1.76	3.7	3.0	-------	4.4	2.7	5.6	2.4	1.80	1.58
5	1.68	1.81	1.85	3.5	2.9	-------	4.1	2.4	4.2	2.3	1.80	1.59
6	1.68	1.68	1.74	4.6	2.8	-------	3.7	2.5	3.8	2.2	1.78	1.88
7	1.64	‖1.66	1.84	3.9	††2.7	-------	3.6	2.5	4.8	2.2	1.78	1.68
8	1.64	1.64	1.74	3.4	2.5	-------	3.4	2.5	4.6	2.2	1.76	1.62
9	1.64	1.74	1.84	3.0	2.5	-------	3.4	2.4	6.5	2.2	1.75	1.60
10	‖1.64	1.64	1.70	3.0	2.4	-------	3.3	2.2	5.5	2.0	1.75	1.60
11	1.63	1.74	1.71	3.0	2.3	-------	3.6	2.2	6.0	2.1	1.78	1.59
12	1.64	1.64	1.62	2.9	2.2	-------	3.6	2.2	4.7	2.0	1.78	1.59
13	1.62	1.73	1.75	3.4	2.0	-------	3.6	2.2	4.2	2.0	1.76	1.58
14	1.64	††2.0	1.61	3.1	2.0	-------	5.2	2.2	3.7	1.97	1.71	1.58
15	1.64	2.1	*	2.8	*	-------	5.1	2.1	4.9	1.90	1.70	1.74
16	1.64	1.85	-------	2.6	-------	-------	4.5	2.2	7.9	2.0	1.70	1.74
17	‖1.60	1.82	-------	††2.7	-------	-------	3.9	2.5	12.5	2.0	1.68	1.63
18	1.57	1.66	3.8	2.7	-------	-------	3.5	2.5	7.6	1.95	1.65	1.66
19	2.3	2.0	3.5	*	-------	-------	3.2	2.4	6.4	1.95	1.64	1.64
20	2.5	2.4	2.7	-------	-------	-------	3.1	2.1	5.5	1.80	1.62	1.62
21	2.2	‖2.3	2.5	-------	-------	-------	3.0	2.3	4.8	1.90	1.60	1.61
22	2.1	2.2	2.4	-------	-------	-------	5.3	2.2	4.6	1.95	1.56	1.60
23	2.0	2.2	2.4	-------	-------	-------	4.3	4.0	3.9	1.92	1.56	1.62
24	‖1.97	2.0	2.3	2.6	-------	-------	4.7	2.7	3.7	1.90	1.58	1.62
25	1.94	2.1	2.7	2.5	-------	-------	3.6	††2.6	3.6	1.94	1.56	1.60
26	1.96	1.98	2.7	2.5	-------	-------	3.6	††2.7	3.2	2.1	1.56	1.59
27	1.96	2.1	2.6	2.7	-------	6.7	3.3	††2.7	3.1	2.0	1.55	1.58
28	1.91	1.95	2.8	2.9	-------	9.9	3.2	††2.7	3.1	1.98	1.64	1.58
29	1.85	2.0	3.0	2.8	-------	8.5	3.0	2.7	2.8	1.95	1.74	2.4
30	1.83	1.89	2.7	3.2	-------	7.3	2.8	2.7	2.7	1.80	1.68	2.1
31	††1.83	-------	2.6	3.5	-------	7.2	-------	2.7	-------	1.84	1.63	-------

NOTES—*Creek frozen December 15 to 17, 1915, January 19 to 23, and February 15 to March 26, 1916, inclusive. ††Estimated. ‖Interpolated.

Daily Discharge, in Second-feet, of Bald Eagle Creek at Beech Creek, Clinton County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	209	290	305	790	2,020	190	6,360	940	640	790	285	193
2	270	238	270	1,910	1,580	190	4,680	865	640	790	280	185
3	256	261	300	2,680	1,370	190	3,280	790	11,300	640	270	182
4	243	234	252	1,800	1,100	190	2,680	865	4,680	640	270	178
5	217	275	295	1,580	1,020	190	2,270	640	2,400	570	270	182
6	217	217	243	2,970	940	190	1,800	715	1,910	500	261	310
7	201	209	290	2,020	865	250	1,680	715	3,280	500	261	217
8	201	201	243	1,470	715	250	1,470	715	2,970	500	252	198
9	201	243	290	1,100	715	250	1,470	640	6,360	500	248	185
10	201	201	225	1,100	640	250	1,370	500	4,500	375	248	185
11	197	243	230	1,100	570	250	1,680	500	5,410	435	261	182
12	201	201	193	1,020	500	250	1,680	500	3,120	375	261	182
13	193	238	248	1,470	375	325	1,680	500	2,400	375	252	178
14	201	375	189	1,180	375	325	3,970	500	1,800	358	230	178
15	201	435	*200	940	*400	325	3,800	435	3,450	320	225	243
16	201	295	125	790	450	325	2,820	500	9,140	375	225	243
17	185	280	125	865	400	200	2,020	715	18,600	375	217	221
18	174	209	1,910	865	260	200	1,580	715	8,540	348	205	209
19	570	375	1,580	*825	190	200	1,280	640	6,160	348	201	201
20	715	640	865	775	160	200	1,180	435	4,500	270	193	193
21	500	570	715	850	160	250	1,100	570	3,280	320	185	189
22	435	500	640	1,100	160	250	4,140	500	2,970	348	171	185
23	375	500	640	1,050	160	250	2,540	2,140	2,020	331	171	193
24	358	375	570	790	160	300	3,120	865	1,800	320	178	193
25	342	435	865	715	200	510	1,680	790	1,680	342	171	185
26	353	364	865	715	200	2,150	1,680	865	1,280	435	171	182
27	353	435	790	865	200	6,740	1,370	865	1,180	375	168	178
28	326	348	940	1,020	200	13,200	1,280	865	1,180	364	201	178
29	295	375	1,100	940	200	10,300	1,100	865	940	348	243	640
30	285	315	865	1,280	-------	7,940	940	865	865	270	217	435
31	285	-------	790	1,580	-------	7,740	-------	865	-------	290	197	-------

NOTES—*Creek frozen December 15 to 17, 1915, January 19 to 23, and February 15 to March 26, 1916, inclusive, and discharge estimated from climatological data. Discharge above 13,890 second-feet is estimated.

Estimated Monthly Discharge of Bald Eagle Creek at Beech Creek, Clinton County

(Drainage area, 565 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	715	174	289	0.51	0.59
November	640	201	329	0.58	0.65
December	1,910		553	0.98	1.13
1916					
January	2,970	715	1,230	2.18	2.51
February	2,020		562	0.99	1.07
March	13,200		1,750	3.10	3.57
April	6,360	940	2,260	4.00	4.46
May	2,140	435	738	1.31	1.51
June	††18,600	640	3,970	7.03	7.84
July	790	270	423	0.75	0.86
August	285	168	225	0.40	0.46
September	640	178	220	0.39	0.44
The year	††18,600	168	1,040	1.84	25.09

NOTES—Creek frozen December 15 to 17, 1915, January 19 to 23, and February 15 to March 26, 1916, inclusive, and discharge estimated from climatological data. ††Estimated.

SUSQUEHANNA BASIN—STATION NO. 23

PINE CREEK AT WATERVILLE

DESCRIPTION OF STATION

Location.—At single span, steel, through truss, highway bridge three-quarters of a mile above railroad station at Waterville, Lycoming County.

Records Available.—Discharge complete from July 15, 1908, to September 30, 1915, and from July 12 to September 30, 1916.

Drainage Area.—750 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the downstream side of the bridge and is read twice daily by E. Homer Love.

Channel.—The right bank never overflows except in extreme stages, such as the floods of 1865 and 1889, the left bank is high and not subject to overflow, and the bed is composed of gravel.

Discharge Measurement of Pine Creek at Waterville, Lycoming County

(Drainage area, 750 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
36	1916 Aug. 8	Wilson & Brown	Sq. ft. 158	Feet 1.02	Sec.-ft. 111	Wading at bridge. 0.6 method

Daily Mean Gage Heights, in feet, of Pine Creek at Waterville, Lycoming County, for the year ending September 30, 1916

Day	July	Aug.	Sept.
1	------	1.1	1.0
2	------	1.0	1.1
3	------	1.0	1.0
4	------	0.9	1.0
5	------	1.0	1.0
6	------	1.0	0.9
7	------	1.0	0.9
8	------	0.8	1.0
9	------	0.8	1.2
10	------	0.8	1.2
11	------	0.9	1.0
12	1.4	1.0	1.0
13	1.4	1.0	0.9
14	1.6	1.0	0.9
15	1.5	1.0	1.1
16	1.4	0.9	1.2
17	1.4	0.9	1.2
18	1.4	0.8	1.1
19	1.3	0.8	1.0
20	1.2	0.9	1.0
21	1.2	0.9	0.9
22	1.4	0.9	0.9
23	1.4	0.9	1.0
24	1.2	0.9	1.0
25	1.2	0.9	1.0
26	1.4	0.9	0.9
27	1.4	0.9	0.9
28	1.4	1.0	0.9
29	1.3	1.1	1.3
30	1.2	1.0	2.1
31	1.1	1.0	------

NOTE—Gage heights October 1, 1915, to July 11, 1916, inclusive, considered unreliable.

Daily Discharge, in Second-feet, of Pine Creek at Waterville, Lycoming County, for the year ending September 30, 1916

Day	July	Aug.	Sept.
1	------	120	90
2	------	90	120
3	------	90	90
4	------	70	90
5	------	90	90
6	------	90	70
7	------	90	70
8	------	50	90
9	------	50	160
10	------	50	160
11	------	70	90
12	260	90	90
13	260	90	70
14	380	90	70
15	320	90	120
16	260	70	160
17	260	70	160
18	260	50	120
19	210	50	90
20	160	70	90
21	160	70	70
22	260	70	70
23	260	70	90
24	160	70	90
25	160	70	90
26	260	70	70
27	260	70	70
28	260	90	70
29	210	120	210
30	160	90	790
31	120	90	------

NOTE—Gage heights October 1, 1915, to July 11, 1916, inclusive, considered unreliable.

Estimated Monthly Discharge of Pine Creek at Waterville, Lycoming County

(Drainage area, 750 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1916					
August	120	50	78	0.10	0.12
September	790	70	124	0.17	0.19

NOTE—Gage heights October 1, 1915, to July 11, 1916, inclusive, considered unreliable.

SUSQUEHANNA BASIN—STATION NO. 24

LYCOMING CREEK NEAR TROUT RUN

DESCRIPTION OF STATION

Location.—At single span, steel, through truss, highway bridge about 2½ miles above Trout Run, Lycoming County.

Records Available.—Discharge complete from December 4, 1913, to September 30, 1916. For other records on this creek at Bridge No. 2 near Williamsport see 1911, 1912 and 1913 Reports of the Water Supply Commission.

Drainage Area.—185 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the downstream side of the bridge and is read twice daily by Orpha Apker.

Channel.—The right bank is of medium height and overflows during extreme stages, the left bank is high and does not overflow, and the bed is composed of gravel and sand and is very uniform.

Discharge Measurement of Lycoming Creek near Trout Run, Lycoming County

(Drainage area, 185 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
38	Aug. 7	Wilson & Brown	44	2.13	52	Wading 100 yds. below bridge

Daily Mean Gage Heights, in feet, of Lycoming Creek near Trout Run, Lycoming County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	2.31	2.13	2.6	3.0	4.2	2.44	7.7	3.6	3.0	2.7	2.38	1.95
2	2.8	2.13	2.6	4.4	4.5	2.44	7.3	3.5	2.9	2.6	2.29	2.29
3	2.35	2.13	2.5	4.3	4.3	2.44	5.9	3.4	6.4	2.6	2.25	2.08
4	2.49	2.15	2.49	3.8	3.9	2.40	5.3	3.5	5.1	2.5	2.21	2.00
5	2.44	2.13	2.43	3.6	3.7	2.32	4.9	3.3	4.4	2.46	2.16	1.98
6	2.5	2.12	2.40	4.6	3.5	2.14	4.8	3.2	4.3	2.35	2.11	1.95
7	2.41	2.13	2.38	3.8	3.2	2.6	4.6	3.2	5.4	2.31	2.14	1.96
8	2.38	2.13	2.37	3.4	3.0	2.5	4.4	3.1	5.8	2.25	2.15	1.95
9	2.34	2.13	2.33	3.8	3.0	2.5	4.2	3.0	4.6	2.25	2.09	1.95
10	2.33	2.13	2.28	3.3	2.9	2.41	3.9	3.0	4.2	2.18	2.02	1.92
11	2.29	2.13	2.23	3.3	2.7	2.38	3.9	2.9	4.9	2.18	2.02	1.90
12	2.27	2.08	2.18	3.2	2.8	2.34	4.7	2.8	4.6	2.5	2.02	1.85
13	2.23	2.08	2.35	3.3	2.8	2.47	4.9	2.8	4.2	2.42	1.99	1.80
14	2.21	2.11	2.25	3.3	2.7	2.6	8.0	2.7	3.9	2.6	1.95	1.80
15	2.23	2.18	2.23	3.2	2.7	2.47	6.1	2.8	4.2	2.48	1.95	2.8
16	2.23	2.33	2.23	3.1	2.6	2.5	5.1	2.7	6.2	2.38	1.95	2.6
17	2.21	2.28	2.6	2.9	2.6	2.7	4.8	3.9	§9.3	2.5	1.95	2.32
18	2.18	2.21	3.0	2.9	2.6	2.6	4.3	3.9	6.0	2.5	1.92	2.22
19	2.25	2.6	3.1	2.9	2.5	2.5	4.0	3.4	6.0	2.38	1.90	2.18
20	2.35	3.4	3.0	2.8	2.6	2.7	3.9	3.3	5.2	2.32	1.86	2.08
21	2.35	3.4	2.9	2.9	2.42	2.44	4.4	3.2	4.6	2.25	1.85	2.05
22	2.31	3.3	2.8	†4.4	2.6	2.37	7.0	3.0	4.2	2.6	1.81	2.30
23	2.25	3.2	2.7	4.2	2.6	2.42	5.6	4.1	4.0	2.45	1.92	2.6
24	2.18	3.1	2.6	3.8	2.6	2.34	5.1	3.8	3.7	2.30	2.00	2.30
25	2.17	2.9	2.6	3.6	2.7	2.5	4.6	3.6	3.5	2.42	1.98	2.20
26	2.18	2.8	4.0	3.6	2.7	3.4	4.6	3.4	3.2	3.4	1.95	2.11
27	2.18	2.8	3.4	4.2	2.6	5.3	4.5	3.5	3.0	3.1	1.98	2.10
28	2.19	2.7	3.4	4.5	2.5	6.5	4.3	3.4	3.1	2.9	2.02	2.05
29	2.18	2.7	3.3	4.1	2.6	6.0	4.1	3.3	2.9	2.7	2.00	4.0
30	2.18	2.6	3.2	3.9	-------	7.3	3.8	3.3	2.8	2.5	1.98	4.1
31	2.16	-------	3.1	4.4	-------	‡7.7	-------	3.2	-------	2.48	1.98	-------

NOTES—†Maximum 5.3 feet at 4 p. m. ‡Maximum 8.8 feet at 6.20 p. m. §Maximum 10.7 feet at 6.20 a. m.

Daily Discharge, in Second-feet, of Lycoming Creek near Trout Run, Lycoming County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	67	50	108	192	600	82	3,220	362	192	126	74	39
2	146	50	108	690	736	82	2,650	328	168	108	65	65
3	71	50	92	644	644	82	1,540	298	1,870	108	61	47
4	90	52	90	434	472	76	1,170	328	1,050	92	57	42
5	82	50	81	362	396	68	940	270	690	86	53	41
6	92	50	76	786	328	51	888	242	644	71	49	39
7	78	50	74	434	242	108	786	242	1,230	67	51	40
8	74	50	73	298	192	92	690	216	1,480	61	52	39
9	70	50	69	434	192	92	600	192	786	61	47	39
10	69	50	64	270	168	78	472	192	600	54	43	37
11	65	50	59	270	126	74	472	168	940	54	43	36
12	63	47	54	242	146	70	836	146	786	92	43	35
13	59	47	71	270	146	87	940	146	600	79	41	34
14	57	49	61	270	126	108	3,750	126	472	108	39	34
15	59	54	59	242	126	87	1,670	146	600	89	39	146
16	59	69	59	216	108	92	1,050	126	1,740	74	39	108
17	57	64	108	168	108	126	888	472	§5,900	92	39	68
18	54	57	192	168	108	108	644	472	1,600	92	37	58
19	61	108	216	168	92	92	514	298	1,600	74	36	54
20	71	298	192	146	108	126	472	270	1,110	68	35	47
21	71	298	168	168	79	82	690	242	786	61	35	45
22	67	270	140	†690	108	73	2,350	192	600	108	34	66
23	61	242	126	600	108	79	1,350	556	514	84	37	108
24	54	216	108	434	108	70	1,050	434	396	63	42	63
25	54	168	108	389	126	99	786	389	328	79	41	56
26	54	146	514	362	126	298	786	298	242	298	39	49
27	54	146	298	600	108	1,170	736	328	192	216	41	48
28	55	126	298	736	92	1,940	644	298	216	169	43	45
29	54	126	270	556	108	1,600	556	270	168	126	42	514
30	54	108	242	472	-------	2,650	434	270	146	92	41	556
31	53	-------	216	690	-------	‡3,220	-------	242	-------	89	41	-------

NOTES—†Maximum=1,170 second-feet. ‡Maximum=5,050 second-feet. §Maximum=8,220 second-feet. Discharges above 3,750 second-feet are estimated.

Estimated Monthly Discharge of Lycoming Creek near Trout Run, Lycoming County

(Drainage area, 185 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	146	53	67	0.36	0.42
November	298	47	106	0.57	0.64
December	514	54	142	0.77	0.89
1916					
January	1,170	146	399	2.16	2.49
February	736	79	211	1.14	1.23
March	††5,050	51	421	2.28	2.63
April	3,750	434	1,120	6.05	6.75
May	556	126	275	1.49	1.72
June	††8,220	146	922	4.98	5.56
July	298	54	98	0.53	0.61
August	74	34	44	0.24	0.28
September	556	34	87	0.47	0.52
The year	††8,220	34	322	1.74	23.74

NOTE—††Estimated.

SUSQUEHANNA BASIN—STATION NO. 25

WEST BRANCH SUSQUEHANNA RIVER AT WILLIAMSPORT

DESCRIPTION OF STATION

Location.—At five span, steel, through truss, highway bridge at Market Street, Williamsport, Lycoming County.

Records Available.—Discharge complete from March 1, 1895, to September 30, 1916. For other records on this river see West Branch Susquehanna River at Bower, West Branch Susquehanna River at Clearfield, West Branch Susquehanna River at Renovo and West Branch Susquehanna River at Lewisburg; also West Branch Susquehanna River at Allenwood in the 1910-11 Report of the Water Supply Commission.

Drainage Area.—5,670 square miles.

Gage.—A standard chain gage, whose elevation of zero is 496.4 feet above mean sea level, is located on the upstream side of the bridge and is read twice daily by John R. Mundy.

Channel.—Both banks are high and rocky, and the bed is composed of gravel and silt.

Discharge Measurement of West Branch Susquehanna River at Williamsport, Lycoming County

(Drainage area, 5,670 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
38	Aug. 7	Wilson & Brown	2,980	0.69	1,627	0.6 method

Daily Mean Gage Heights, in feet, of West Branch Susquehanna River at Williamsport, Lycoming County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	0.9	1.7	2.2	4.8	6.4	2.8	16.1	4.9	3.9	4.1	1.0	0.30
2	0.9	1.6	2.1	4.7	6.9	2.6	15.4	4.6	3.8	3.6	1.0	0.31
3	1.0	1.4	2.0	4.6	7.0	2.4	13.3	4.2	7.1	3.1	0.9	0.34
4	1.4	1.3	1.9	4.7	6.8	2.4	11.3	3.9	16.0	2.8	0.8	0.35
5	1.6	1.2	1.8	7.6	6.4	2.3	8.7	3.6	11.6	2.6	0.7	0.34
6	1.5	1.2	1.7	8.0	5.4	2.1	7.8	3.5	8.8	2.3	0.6	0.33
7	1.4	1.1	1.5	9.3	4.7	1.9	6.9	3.5	7.8	2.1	0.6	0.31
8	1.2	1.0	1.4	8.6	4.5	1.8	6.1	3.4	9.3	1.8	0.6	0.33
9	1.5	1.0	1.3	6.7	4.3	1.9	5.9	3.2	8.9	1.6	0.6	0.38
10	1.7	1.0	1.1	5.2	4.0	2.8	5.6	3.2	9.0	2.0	0.6	0.37
11	1.6	1.0	0.9	5.0	3.9	4.1	5.4	3.1	8.9	1.8	0.5	0.37
12	1.3	1.0	0.7	4.8	3.8	4.0	5.3	2.9	10.2	1.6	0.6	0.33
13	1.2	0.9	0.6	4.7	3.7	3.7	5.9	2.8	8.5	1.4	0.6	0.27
14	1.0	0.9	0.5	4.7	3.2	3.2	9.1	2.7	7.2	1.6	0.5	0.24
15	1.0	0.9	0.7	5.0	2.5	3.8	14.4	2.4	6.6	1.6	0.47	0.19
16	1.0	0.9	1.0	4.5	2.2	3.9	12.0	2.3	7.6	1.6	0.43	0.21
17	0.9	0.9	0.8	4.0	2.2	3.8	9.3	2.2	§18.3	1.6	0.41	0.25
18	0.9	0.9	1.8	3.8	2.5	3.6	7.8	5.1	18.5	1.6	0.40	0.28
19	0.9	1.1	‡5.3	3.7	2.7	2.9	6.6	5.2	11.8	1.4	0.39	0.27
20	4.8	2.0	6.4	3.5	2.8	2.6	5.6	4.5	11.0	1.3	0.37	0.26
21	†6.4	2.2	5.3	3.0	2.6	2.5	5.3	4.0	10.1	1.1	0.34	0.25
22	5.0	3.6	4.4	2.8	2.2	2.6	6.5	3.5	8.8	1.0	0.31	0.23
23	2.9	3.5	3.6	5.2	2.0	2.6	9.7	3.9	7.6	1.1	0.29	0.25
24	2.6	3.3	3.2	7.0	2.0	2.6	9.5	6.2	6.7	1.2	0.29	0.29
25	2.6	3.2	3.5	5.9	2.0	4.6	7.8	5.9	5.8	1.1	0.29	0.29
26	2.4	3.1	3.5	5.8	2.3	5.2	7.0	5.3	5.2	1.2	0.28	0.27
27	2.4	2.9	3.9	5.5	2.4	11.7	6.5	4.6	5.1	2.3	0.27	0.25
28	2.3	2.6	5.5	5.4	2.6	17.4	6.3	4.3	5.0	1.8	0.29	0.25
29	2.2	2.5	5.3	5.3	2.9	20.3	5.8	4.2	4.9	1.6	0.35	0.7
30	1.9	2.4	5.3	5.4	-------	17.0	5.3	4.2	4.8	1.4	0.32	2.3
31	1.8	-------	5.0	5.4	-------	17.1	-------	4.0	-------	1.2	0.29	-------

NOTES—†Maximum 8.0 feet estimated at 1 a. m. ‡Maximum 7.0 feet estimated at 8 p. m. §Maximum 21.0 feet at 12 p. m.

Daily Discharge, in Second-feet, of West Branch Susquehanna River at Williamsport, Lycoming County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	1,900	3,370	4,490	12,800	19,900	6,000	89,400	13,200	9,350	10,000	2,060	1,080
2	1,900	3,160	4,260	12,300	22,400	5,470	82,400	11,900	9,020	8,380	2,060	1,090
3	2,060	2,770	4,020	11,900	22,900	4,980	62,800	10,400	23,400	6,850	1,900	1,120
4	2,770	2,580	3,800	12,300	21,900	4,980	47,400	9,350	88,400	6,000	1,750	1,140
5	3,160	2,400	3,580	25,900	19,900	4,730	31,800	8,380	49,400	5,470	1,600	1,120
6	2,960	2,400	3,370	28,000	15,400	4,260	27,000	8,060	32,300	4,730	1,460	1,110
7	2,770	2,220	2,960	35,100	12,300	3,800	22,400	8,060	27,000	4,260	1,460	1,090
8	2,400	2,060	2,770	31,200	11,500	3,580	18,500	7,750	35,100	3,580	1,460	1,110
9	2,960	2,060	2,580	21,400	10,800	3,800	17,600	7,140	32,900	3,160	1,460	1,180
10	3,370	2,060	2,220	14,500	9,690	6,000	16,200	7,140	33,500	4,020	1,460	1,160
11	3,160	2,060	1,900	13,600	9,350	10,000	15,400	6,850	32,900	3,580	1,330	1,160
12	2,580	2,060	1,600	12,800	9,020	9,690	14,900	6,280	40,400	3,160	1,460	1,110
13	2,400	1,900	1,460	12,300	8,700	8,700	17,600	6,000	30,700	2,770	1,460	1,040
14	2,060	1,900	1,330	12,300	7,140	7,140	34,000	5,730	23,900	3,160	1,330	1,000
15	2,060	1,900	1,600	13,600	5,220	9,020	72,700	4,980	20,900	3,160	1,290	943
16	2,060	1,900	2,060	11,500	4,490	9,350	52,400	4,730	25,900	3,160	1,240	967
17	1,900	1,900	1,750	9,690	4,490	9,020	35,100	4,490	§112000	3,160	1,210	1,020
18	1,900	1,900	3,580	9,020	5,220	8,380	27,000	14,000	114,000	3,160	1,200	1,050
19	1,900	2,220	‡14,900	8,700	5,730	6,280	20,900	14,500	50,900	2,770	1,190	1,040
20	12,800	4,020	19,900	8,060	6,000	5,470	16,200	11,500	45,400	2,580	1,160	1,030
21	†19,900	4,490	14,900	6,560	5,470	5,220	14,900	9,690	39,800	2,220	1,120	1,020
22	13,600	8,380	11,200	6,000	4,490	5,470	20,400	8,060	32,300	2,060	1,090	991
23	6,280	8,060	8,380	14,500	4,020	5,470	37,400	9,350	25,900	2,220	1,060	1,020
24	5,470	7,440	7,140	22,900	4,020	5,470	36,300	19,000	21,400	2,400	1,060	1,060
25	5,470	7,140	8,060	17,600	4,020	11,900	27,000	17,600	17,200	2,220	1,060	1,060
26	4,980	6,850	8,060	17,200	4,730	14,500	22,900	14,900	14,500	2,400	1,050	1,040
27	4,980	6,280	9,350	15,800	4,980	50,200	20,400	11,900	14,000	4,730	1,040	1,020
28	4,730	5,470	15,800	15,400	5,470	103,000	19,500	10,800	13,600	3,580	1,060	1,020
29	4,490	5,220	14,900	14,900	6,280	133,000	17,200	10,400	13,200	3,160	1,140	1,600
30	3,800	4,980	14,900	15,400	-------	98,600	14,900	10,400	12,800	2,770	1,100	4,730
31	3,580	-------	13,600	15,400	-------	99,600	-------	9,690	-------	2,400	1,060	-------

NOTES—†Maximum=28,000 second-feet. ‡Maximum=22,900 second-feet. §Maximum=141,000 second-feet.

Estimated Monthly Discharge of West Branch Susquehanna River at Williamsport, Lycoming County

(Drainage area, 5,670 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	28,000	1,900	4,400	0.78	0.90
November	8,380	1,900	3,700	0.65	0.72
December	22,900	1,330	6,790	1.20	1.38
1916					
January	35,100	6,000	15,400	2.72	3.14
February	22,900	4,020	9,500	1.68	1.81
March	133,000	3,580	21,400	3.78	4.36
April	89,400	14,900	31,800	5.61	6.26
May	19,000	4,490	9,750	1.72	1.98
June	141,000	9,020	34,700	6.12	6.83
July	10,000	2,060	3,780	0.67	0.77
August	2,060	1,040	1,330	0.23	0.26
September	4,730	943	1,200	0.21	0.23
The year	141,000	943	11,900	2.10	28.64

SUSQUEHANNA BASIN—STATION NO. 26

BUFFALO CREEK NEAR LEWISBURG

DESCRIPTION OF STATION

Location.—At single span, through truss, wooden covered bridge known as "Nogles Bridge" about ¼ mile above the mouth of Little Buffalo Creek.

Records Available.—Discharge measurements and gage heights from September 8, 1913, to February 29, 1916.

Drainage Area.—107 square miles.

Gage.—A sectional chain gage, whose elevation of zero was arbitrary, was located on the downstream side of the bridge and was read twice daily by William W. Haas.

Channel.—The right bank is subject to overflow during extreme stages, the left bank is not subject to overflow, and the bed is composed of gravel.

Remarks.—Station discontinued February 29, 1916.

Daily Mean Gage Heights, in feet, of Buffalo Creek near Lewisburg, Union County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.
1	1.6	0.81	1.2	1.6	2.3
2	1.6	0.78	1.2	2.2	2.3
3	1.3	0.78	1.1	2.3	2.4
4	1.3	0.84	1.2	2.1	*1.7
5	1.6	0.91	1.2	1.9	1.9
6	1.5	0.81	1.1	1.8	1.9
7	1.3	0.78	0.98	2.0	1.9
8	1.3	0.78	1.0	1.9	1.9
9	1.2	0.94	*1.2	1.8	1.7
10	1.3	0.86	1.3	*1.9	1.7
11	1.2	0.84	1.3	1.7	1.7
12	1.2	0.78	1.3	1.5	1.7
13	0.98	0.81	1.3	2.9	1.7
14	1.1	0.84	1.2	2.8	1.5
15	0.96	1.2	1.2	2.8	1.4
16	0.98	1.1	1.2	2.7	1.4
17	0.96	1.1	1.5	2.6	1.5
18	0.98	1.0	2.5	*2.5	1.5
19	1.1	1.2	1.7	2.4	1.6
20	1.0	1.1	*1.6	2.3	1.8
21	0.98	1.1	1.6	2.2	1.9
22	0.96	1.2	1.4	2.4	1.6
23	0.96	1.2	1.6	2.4	1.6
24	0.91	1.1	1.4	2.2	1.7
25	1.1	1.2	1.8	1.6	2.4
26	1.1	1.1	1.6	1.5	2.5
27	1.0	1.1	1.6	1.4	2.0
28	1.0	1.1	1.6	1.4	1.8
29	0.94	1.2	1.6	1.5	1.8
30	0.94	1.2	1.6	1.8	-------
31	0.91	-------	1.6	1.8	-------

NOTES—*Creek frozen December 9 to 18, 1915, December 20, 1915, to January 7, 1916, January 10 to 13, January 18 to 25, and February 4 to 29, 1916, inclusive. Station discontinued February 29, 1916.

SUSQUEHANNA BASIN—STATION NO. 27

WEST BRANCH SUSQUEHANNA RIVER AT LEWISBURG

DESCRIPTION OF STATION

Location.—At six span, steel, through truss, highway bridge at Market Street, Lewisburg, Union County.

Records Available.—Gage heights from September 21, 1913, to September 30, 1916. For other records on this river see West Branch Susquehanna River at Bower, West Branch Susquehanna River at Clearfield, West Branch Susquehanna River at Renovo and West Branch Susquehanna River at Williamsport; also West Branch Susquehanna River at Allenwood in the 1910-11 Report of the Water Supply Commission.

Drainage Area.—6,830 square miles.

Gage.—A gage, whose elevation of zero is arbitrary, is painted on the first pier from the right abutment and is read twice daily by T. E. Irland.

Channel.—The right bank is high and steep, the left bank is of medium height and liable to overflow, and the bed is composed of gravel.

Remarks.—This station is maintained for flood warning purposes only.

Daily Mean Gage Heights, in feet, of West Branch Susquehanna River at Lewisburg, Union County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	0.2	0.8	1.0	9.1	4.9	1.5	15.6	3.6	2.9	2.4	1.0	0.0
2	0.8	0.8	1.0	3.0	4.8	1.5	15.2	3.4	2.8	1.8	0.9	0.0
3	0.8	0.8	1.0	5.6	5.2	1.5	13.2	3.1	3.5	1.6	0.8	0.0
4	0.8	0.8	1.0	8.2	4.8	1.8	10.1	3.0	12.4	1.1	0.8	0.0
5	1.0	0.8	1.0	6.5	4.1	1.8	8.1	2.8	9.4	1.0	0.6	0.0
6	1.0	0.8	1.0	6.6	4.0	1.8	7.0	2.8	5.8	1.0	0.5	0.0
7	1.0	0.8	0.8	7.5	3.5	1.8	6.0	2.5	5.8	0.8	0.5	0.0
8	1.2	0.8	0.8	6.5	2.9	1.8	5.5	2.5	7.5	0.8	0.2	0.0
9	1.2	0.8	0.8	4.9	2.6	1.5	4.8	2.2	7.6	0.8	0.2	0.0
10	1.0	0.8	0.8	4.5	2.1	2.1	4.6	2.2	7.5	2.0	0.2	0.0
11	1.0	0.8	0.8	3.9	2.0	2.0	4.4	2.0	7.2	1.6	0.0	0.0
12	0.8	0.8	0.8	3.5	2.0	2.0	4.5	1.9	8.1	1.1	0.0	0.0
13	0.8	0.8	0.8	3.6	2.0	2.0	4.9	1.8	7.4	0.8	0.0	0.0
14	0.8	0.5	0.8	4.0	2.0	2.1	7.2	1.8	6.0	0.8	0.0	0.0
15	0.8	0.5	0.8	4.9	2.0	2.2	13.1	1.6	5.0	0.8	0.0	0.0
16	0.8	0.5	0.8	3.5	2.0	2.2	11.1	1.5	5.8	0.8	0.0	0.0
17	0.6	0.5	0.8	3.2	1.8	2.2	9.0	1.9	13.5	0.8	0.0	0.0
18	0.5	0.5	1.0	2.5	1.8	2.2	6.9	3.1	†17.2	0.8	0.0	0.0
19	0.5	0.8	1.9	1.5	1.8	2.2	5.4	4.0	10.5	0.8	0.0	0.0
20	1.8	1.1	5.0	1.2	1.8	2.2	4.6	3.5	9.8	0.8	0.0	0.0
21	4.5	1.2	4.1	1.6	1.8	1.8	4.1	2.9	8.5	0.8	0.0	0.0
22	2.9	2.2	2.8	2.4	1.5	1.8	5.1	2.5	7.6	0.8	0.0	0.0
23	2.4	2.1	2.5	4.8	1.1	1.8	8.2	2.8	6.4	0.8	0.0	0.0
24	1.9	2.0	2.5	5.2	1.0	1.8	8.4	4.0	5.9	0.8	0.0	0.0
25	1.8	2.0	2.4	4.8	1.2	2.5	6.9	4.6	5.2	0.9	0.0	0.0
26	1.4	1.9	2.8	4.2	1.8	3.5	5.9	4.0	4.2	1.6	0.0	0.0
27	1.0	1.8	3.6	4.0	1.8	8.2	5.5	3.4	3.9	2.9	0.0	0.0
28	1.0	1.5	3.9	4.1	1.8	15.5	5.2	2.9	3.8	1.9	0.0	0.0
29	1.0	1.2	4.0	4.0	1.6	16.9	4.9	2.8	3.5	1.6	0.0	0.0
30	0.8	1.0	4.0	4.5	-------	16.2	4.2	2.8	3.1	1.4	0.0	0.4
31	0.8	-------	3.6	4.0	-------	15.9	-------	3.0	-------	1.1	0.0	-------

NOTE—†Maximum 17.8 feet at 7 a. m.

SUSQUEHANNA BASIN—STATION NO. 28

SUSQUEHANNA RIVER AT SELINSGROVE

DESCRIPTION OF STATION

Location.—At Pennsylvania Railroad Bridge between Selinsgrove Junction and Selinsgrove, Snyder County.

Records Available.—Daily gage heights from March 19, 1914, to September 30, 1916. For other records on this river see Susquehanna River at Harrisburg; also Susquehanna River at McCall Ferry in the 1910-11 Report of the Water Supply Commission.

Drainage Area.—18,500 square miles.

Gage.—A gage, whose elevation of zero is 411.6 feet above mean sea level, is painted on the west side of the second pier from the right or west bank and is read twice daily by H. E. Richter.

Channel.—Both banks are high, and the bed is rocky.

Remarks.—Only gage heights are obtained at this station, which are used for flood warning purposes only. The U. S. Weather Bureau has observed gage heights at this station from October 1, 1892, to date.

Daily Mean Gage Heights, in feet, of Susquehanna River at Selinsgrove, Snyder County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	1.0	1.2	1.7	3.7	5.3	2.7	15.0	5.2	3.4	3.0	1.6	0.1
2	1.0	1.1	1.6	3.6	5.9	3.0	14.0	4.7	3.0	2.5	1.4	0.1
3	1.0	1.0	1.5	5.4	5.8	2.8	14.0	4.2	3.0	2.8	1.3	0.1
4	1.2	1.0	1.4	7.7	5.2	2.4	11.8	3.8	7.6	2.6	1.3	0.1
5	1.6	1.0	1.4	6.9	4.6	2.0	10.4	3.6	8.4	2.1	1.2	0.1
6	2.0	0.9	1.3	6.6	3.8	2.0	8.8	3.4	6.6	2.0	1.1	0.1
7	2.0	0.8	1.2	7.5	3.4	2.1	7.6	3.2	5.4	1.8	1.1	0.1
8	2.6	0.8	1.2	7.1	3.2	2.2	7.1	3.1	5.7	1.6	1.0	0.2
9	2.4	0.8	1.1	5.9	3.0	2.3	6.6	3.0	6.0	1.5	1.0	0.2
10	2.0	0.9	1.1	5.0	2.5	2.5	6.2	3.0	6.4	2.2	0.8	0.2
11	1.8	0.9	1.1	4.4	2.2	2.6	5.8	2.8	5.8	2.1	0.8	0.1
12	1.6	0.8	1.2	4.0	2.0	2.6	5.7	2.6	6.0	1.8	0.8	0.1
13	1.5	0.7	1.2	4.0	1.8	2.6	6.2	2.4	5.8	1.6	0.7	0.0
14	1.4	0.7	1.0	4.4	1.7	3.0	8.2	2.2	5.4	1.6	0.6	0.0
15	1.2	0.7	1.0	4.3	1.6	3.0	11.8	2.1	4.8	1.5	0.6	0.3
16	1.1	0.7	0.9	4.0	1.4	2.5	11.2	2.0	5.2	1.5	0.5	1.0
17	1.4	0.9	1.0	3.6	1.6	2.2	8.8	2.0	8.0	1.6	0.5	1.0
18	2.6	1.0	1.8	3.1	1.8	2.0	7.4	2.8	12.4	2.0	0.6	1.0
19	2.3	1.3	2.9	2.3	2.0	2.0	6.4	5.2	10.1	1.8	0.5	0.9
20	2.2	1.7	4.2	2.3	1.9	2.0	5.8	5.0	8.0	1.6	0.4	0.9
21	3.4	2.1	4.5	2.2	1.8	2.1	5.2	4.2	7.2	1.5	0.4	0.8
22	3.8	2.6	3.6	2.8	1.7	2.1	5.5	3.6	6.6	1.8	0.3	0.8
23	3.2	2.8	3.2	4.4	1.8	2.0	7.2	3.3	5.6	1.6	0.3	1.2
24	2.8	2.6	2.9	5.0	1.8	2.0	8.7	3.8	5.2	1.5	0.3	1.2
25	2.4	2.5	2.6	5.3	2.0	2.3	8.0	4.9	4.6	1.8	0.3	1.1
26	2.0	2.3	3.2	5.2	2.4	3.5	6.8	4.6	4.0	3.7	0.2	1.1
27	1.8	2.0	4.4	4.9	2.4	5.3	6.3	3.8	3.6	4.8	0.2	1.1
28	1.6	1.9	5.4	5.0	2.3	8.2	6.5	3.1	3.4	3.6	0.2	1.2
29	1.4	1.8	5.4	5.2	2.4	13.6	6.8	3.2	3.4	2.5	0.2	1.0
30	1.2	1.8	5.0	5.8	-------	13.8	6.0	3.8	3.4	2.0	0.2	1.4
31	1.2	-------	4.1	5.5	-------	14.2	-------	3.6	-------	1.6	0.2	-------

SUSQUEHANNA BASIN—STATION NO. 29

RAYSTOWN BRANCH JUNIATA RIVER AT SAXTON

DESCRIPTION OF STATION

Location.—At two span, steel, through truss, highway bridge between Stonestown and Saxton Furnace, Bedford County.

Records Available.—Discharge complete from August 31, 1911, to September 30, 1916.

Drainage Area.—790 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the downstream side of the bridge and is read twice daily by D. R. Jenkins.

Channel.—Both banks are high and only overflow in extreme stages, and the bed is composed of sand, gravel and stones.

Daily Mean Gage Heights, in feet, of Raystown Branch Juniata River at Saxton, Bedford County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	1.2	1.1	1.4	4.2	3.6	2.6	5.0	3.2	1.7	2.1	2.0	1.3
2	2.0	1.3	1.4	4.4	3.4	2.7	4.6	3.0	1.6	2.1	1.9	1.2
3	3.2	1.2	1.4	5.5	3.4	2.6	4.0	2.8	1.9	1.9	1.6	1.2
4	2.6	1.2	1.3	4.6	3.1	2.4	3.6	2.7	2.0	1.8	1.6	1.2
5	2.3	1.2	1.3	3.8	3.0	2.2	3.8	2.5	2.0	1.7	1.5	1.1
6	2.0	1.2	1.3	3.4	2.9	2.1	3.2	2.5	1.9	1.6	1.6	1.1
7	1.9	1.1	1.2	3.2	3.0	2.2	3.0	2.4	2.0	1.5	1.8	1.1
8	1.8	1.1	1.2	2.8	3.0	2.6	3.0	2.3	2.1	1.5	2.2	1.2
9	1.7	1.2	1.2	2.6	2.9	2.6	3.1	2.3	2.4	1.5	1.9	1.2
10	1.6	1.2	1.1	2.4	2.6	2.8	3.2	2.2	2.5	1.4	1.7	1.1
11	1.5	1.2	1.3	2.6	2.5	2.6	3.3	2.2	4.2	1.4	1.5	1.1
12	1.4	1.2	1.3	3.0	2.5	2.5	3.8	2.0	3.7	1.4	1.7	1.1
13	1.4	1.2	*	3.7	4.6	2.4	3.8	1.9	3.1	1.4	1.9	1.1
14	1.4	1.2	-------	3.7	5.2	3.2	4.5	1.8	2.6	1.5	1.9	1.1
15	1.3	1.3	-------	3.4	4.1	4.0	4.4	1.6	2.8	1.4	1.7	1.6
16	1.2	1.5	-------	3.2	3.6	3.8	4.1	1.8	5.4	1.4	1.6	1.9
17	1.1	1.6	-------	2.8	3.5	3.3	3.8	2.4	9.1	1.5	1.5	1.5
18	1.1	1.5	-------	2.0	2.8	3.0	3.5	2.4	6.6	1.5	1.5	1.2
19	1.2	1.6	4.8	1.8	2.2	2.8	3.3	2.4	5.0	1.4	1.5	1.1
20	1.8	1.8	3.8	1.7	2.4	2.6	5.0	2 0	4.4	1.4	1.4	1.1
21	2.0	2.5	3.2	2.0	2.6	2.8	2.9	2.0	3.8	1.4	1.3	1.1
22	1.8	2.2	2.7	2.6	2.6	4.2	2.3	1.9	3.7	1.5	1.2	1.0
23	1.6	2.1	2.4	2.5	2.4	8.3	3.4	2.0	3.4	1.5	1.2	1.1
24	1.4	2.0	2.3	2.4	2.4	5.4	3.4	2.0	3.2	1.4	1.3	1.1
25	1.4	1.8	2.3	2.1	2.6	4.6	3.4	1.8	2.9	2.4	1.4	1.1
26	1.3	1.8	2.6	2.1	2.8	5.0	4.5	1.8	2.7	‡5.8	1.4	1.1
27	1.3	1.7	3.0	2.2	2.6	5.6	4.2	1.8	2.6	3.5	1.3	1.1
28	1.2	1.6	2.8	2.3	2.4	†10.8	3.9	3.0	2.9	2.8	1.3	1.1
29	1.2	1.5	3.4	2.3	2.2	8.9	3.6	1.8	2.6	2.5	1.3	1.7
30	1.2	1.5	5.4	2.3	-------	7.8	3.2	1.7	2.3	2.1	1.2	2.6
31	1.2	-------	4.4	3.1	-------	6.4	-------	1.8	-------	1.8	1.3	-------

NOTES—*River frozen December 13 to 18, 1915, inclusive. †Maximum 11.5 feet at 5 p. m. ‡Maximum 7.6 feet at 6:30 a. m.

Daily Discharge, in Second-feet, of Raystown Branch Juniata River at Saxton, Bedford County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	200	181	250	2,950	2,100	950	4,280	1,600	356	552	494	223
2	494	223	250	3,260	1,840	1,050	3,590	1,360	313	552	398	200
3	1,600	223	250	5,210	1,840	950	2,650	1,150	442	442	316	200
4	950	200	223	3,590	1,480	775	2,100	1,050	494	398	316	200
5	695	200	223	2,370	1,360	620	2,370	860	494	356	280	181
6	494	200	223	1,840	1,260	552	1,600	860	442	316	316	181
7	442	181	200	1,600	1,360	620	1,360	775	494	280	398	181
8	398	181	200	1,150	1,360	950	1,360	695	552	280	020	200
9	356	200	200	950	1,260	950	1,480	695	775	280	442	200
10	316	200	181	775	950	1,150	1,600	620	860	250	356	181
11	280	200	223	950	860	950	1,720	620	2,950	250	280	181
12	250	200	223	1,360	860	860	2,370	494	2,230	250	356	181
13	250	200	*150	2,230	3,590	775	2,370	442	1,480	250	442	181
14	250	200	125	2,230	4,640	1,600	3,420	398	950	280	442	181
15	223	223	100	1,840	2,800	2,650	3,260	316	1,150	250	356	316
16	200	280	110	1,600	2,100	2,370	2,800	398	5,020	250	316	442
17	181	316	150	1,150	1,970	1,720	2,370	775	13,400	280	280	280
18	181	280	550	494	1,150	1,360	1,970	775	7,440	280	280	200
19	200	316	3,930	398	620	1,150	1,720	775	4,280	250	280	181
20	398	398	2,370	356	775	950	1,360	494	3,260	250	250	181
21	494	860	1,600	494	950	1,150	1,260	494	2,370	250	223	181
22	398	620	1,050	950	950	2,950	1,720	442	2,230	280	200	164
23	316	552	775	860	775	11,300	1,840	494	1,840	280	200	181
24	250	494	695	775	775	5,020	1,840	494	1,600	250	223	181
25	250	398	695	552	950	3,590	1,840	398	1,260	775	250	181
26	223	398	950	552	1,150	4,280	3,420	398	1,050	‡5,800	250	181
27	223	356	1,360	620	950	5,400	2,950	398	950	1,970	223	181
28	200	316	1,150	695	775	†18,500	2,510	494	1,260	1,150	223	181
29	200	280	1,840	695	620	12,900	2,100	398	950	860	223	356
30	200	280	5,020	695	------	10,100	1,600	356	695	552	200	950
31	200	------	3,260	1,480	------	7,020	------	398	------	398	223	------

NOTES—*River frozen December 13 to 18, 1915, inclusive, and discharge estimated from climatological data. †Maximum=20,900 second-feet. ‡Maximum=9,650 second-feet.

Estimated Monthly Discharge of Raystown Branch Juniata River at Saxton, Bedford County

(Drainage area, 790 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	1,600	181	365	0.46	0.53
November	860	181	305	0.39	0.44
December	5,020	------	920	1.16	1.34
1916					
January	5,210	356	1,440	1.82	2.10
February	4,640	620	1,450	1.84	1.98
March	20,900	552	3,390	4.29	4.95
April	4,280	1,260	2,230	2.82	3.15
May	1,600	316	642	0.81	0.93
June	13,400	316	2,050	2.59	2.89
July	9,650	250	608	0.77	0.89
August	620	200	311	0.39	0.45
September	950	164	234	0.30	0.34
The year	20,900	164	1,160	1.47	19.99

NOTE—River frozen December 13 to 18, 1915, inclusive, and discharge estimated from climatological data.

SUSQUEHANNA BASIN—STATION NO. 30

FRANKSTOWN BRANCH JUNIATA RIVER AT HUNTINGDON

DESCRIPTION OF STATION

SMITHFIELD BRIDGE

Location.—At three span, steel, through truss, highway bridge known as Smithfield Bridge, Huntingdon, Huntingdon County.

Records Available.—Discharge measurements and gage heights from September 29, 1915, to September 30, 1916.

Drainage Area.—845 square miles.

Gage.—A standard chain gage, whose elevation of zero is 599.21 feet above mean sea level, is located on the downstream side of the bridge and is read thrice daily by Lawrence White.

Channel.—Both banks are high but may overflow during extreme floods, and the bed is composed of rocks and gravel, with some vegetable growth.

Remarks.—The discharge measurements and gage heights may be obtained in the office of the Water Supply Commission upon request.

FOURTH STREET BRIDGE

Location.—At two span, covered wagon bridge known as Fourth Street Bridge, Huntingdon, Huntingdon County.

Records Available.—Gage heights have been obtained since May 1, 1895. For detailed information relative to data at this station see page 106 in the 1915 Report of the Water Supply Commission.

Drainage Area.—See page 107 in the 1915 Report of the Water Supply Commission.

Gage.—A staff gage, whose elevation of zero is 595.23 feet above mean sea level, is located on the downstream corner of the pier and is read thrice daily by Lawrence White.

Channel.—The right bank is low and overflows during high stages, the left bank is high and not subject to overflow, and the bed is composed of gravel and vegetable growths.

General Remarks.—All data at these stations is withheld for publication until a definite relation curve is established between the two gages and all previous published data revised, when the Fourth Street station will be abandoned and the Smithfield Bridge used as the permanent gaging station.

SUSQUEHANNA BASIN—STATION NO. 31

AUGHWICK CREEK AT POGUE

DESCRIPTION OF STATION

Location.—At single span, steel, through truss, highway bridge, 600 feet above the East Broad Top Railroad Bridge, at Pogue, Huntingdon County.

Records Available.—Discharge measurements and gage heights from May 1, 1915, to February 24, 1916.

Drainage Area.—167 square miles.

Gage.—A standard chain gage, whose elevation of zero was 619.04 feet above mean sea level, was located on the downstream side of the bridge and was read twice daily by C. B. Wagner.

Channel.—The right bank overflows at elevation 627.50 feet, the left bank is high and not subject to overflow, and the bed is composed of gravel.

Remarks.—Station discontinued February 24, 1916.

Daily Mean Gage Heights, in feet, of Aughwick Creek at Pogue, Huntingdon County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.
1	2.2	2.2	2.2	3.9	2.5
2	2.8	2.1	2.2	5.1	2.5
3	2.7	2.0	2.4	4.6	2.4
4	2.8	2.0	2.3	4.1	2.3
5	2.8	2.0	2.3	3.6	2.6
6	2.6	2.1	2.3	3.6	2.8
7	2.6	2.1	2.3	3.4	3.0
8	2.5	2.1	2.2	3.3	3.1
9	2.4	2.1	2.2	3.2	3.4
10	2.4	2.0	2.2	3.6	3.3
11	2.3	2.0	2.2	3.2	3.1
12	2.3	2.0	2.1	3.3	2.9
13	2.2	2.0	*2.3	3.5	3.9
14	2.2	2.0	2.2	3.6	3.6
15	2.2	2.2	2.2	3.3	3.5
16	2.2	2.8	2.2	3.2	3.9
17	2.2	2.3	2.3	3.1	3.5
18	2.2	2.2	4.9	3.0	3.5
19	2.2	2.4	5.9	*2.9	3.5
20	2.2	3.4	3.9	2.8	3.2
21	2.2	3.0	3.4	2.9	3.2
22	2.3	2.6	3.4	3.1	3.1
23	2.3	2.6	3.1	3.4	3.0
24	2.3	2.5	3.1	3.1	2.9
25	2.3	2.5	3.0	2.6	-------
26	2.3	2.4	3.2	2.7	-------
27	2.2	2.4	3.4	2.9	-------
28	2.2	2.4	3.4	2.9	-------
29	2.2	2.4	4.3	2.8	-------
30	2.2	2.3	5.4	2.4	-------
31	2.2	-------	4.2	2.4	-------

NOTES.—*Creek frozen December 13 to 18, 1915, and January 19 to 26, 1916, inclusive. Station discontinued February 24, 1916.

SUSQUEHANNA BASIN—STATION NO. 32

KISHACOQUILLAS CREEK AT KULPS

DESCRIPTION OF STATION

Location.—At two span, wooden, highway bridge known as "Red Bridge" at Kulps, Mifflin County.

Records Available.—Discharge complete from August 21, 1911, to February 29, 1916.

Drainage Area.—190 square miles.

Gage.—A staff gage, whose elevation of zero was arbitrary, was located on the upstream face of the left abutment and was read twice daily by Thomas W. Hawke.

Channel.—The right bank is high but overflows during extreme stages, the left bank is high and not subject to overflow, and the bed consists of rocks, mud and gravel.

Remarks.—There is a mill dam one-half mile below the bridge. Station discontinued February 29, 1916.

Daily Mean Gage Heights, in feet, of Kishacoquillas Creek at Kulps, Mifflin County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.
1	1.1	0.95	1.0	1.4	2.0
2	1.2	0.73	1.0	1.8	2.0
3	1.2	0.72	1.0	2.2	1.9
4	1.1	0.76	0.92	2.0	1.9
5	1.1	0.69	1.0	2.0	1.8
6	1.1	0.74	1.0	2.5	1.8
7	1.1	0.96	1.0	2.1	1.8
8	1.1	0.89	1.0	2.0	1.6
9	1.1	0.96	0.99	1.8	1.6
10	1.1	1.1	0.96	1.8	1.6
11	1.1	0.74	1.0	1.8	1.5
12	1.0	0.72	0.90	1.8	1.5
13	1.1	0.77	1.0	2.1	1.5
14	1.0	1.0	1.0	1.9	1.4
15	1.0	1.2	0.76	1.6	1.3
16	1.0	0.92	0.97	1.6	1.4
17	0.90	0.74	0.94	1.6	1.4
18	0.87	0.74	1.9	1.5	1.5
19	1.1	1.3	1.7	1.6	1.4
20	1.1	1.4	1.5	1.5	1.4
21	1.1	1.2	1.3	1.5	1.3
22	1.1	1.2	1.3	1.6	1.3
23	1.1	1.2	1.3	1.5	1.4
24	0.92	1.2	1.2	1.5	1.3
25	1.0	1.1	1.2	1.4	1.6
26	0.86	1.1	1.6	1.4	1.4
27	0.74	1.1	1.4	1.5	1.5
28	0.90	1.1	1.4	1.5	1.4
29	0.90	1.1	1.5	1.5	1.4
30	0.74	1.1	1.5	1.6	-------
31	1.1	-------	1.4	1.8	-------

NOTE.—Station discontinued February 29, 1916.

Daily Discharge, in Second-feet, of Kishacoquillas Creek at Kulps, Mifflin County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.
1	126	88	100	222	504
2	154	40	100	390	504
3	154	38	100	640	444
4	126	46	81	504	444
5	126	32	100	504	390
6	126	42	100	860	390
7	126	90	100	570	390
8	126	74	100	564	298
9	126	90	98	390	298
10	126	126	90	390	298
11	126	42	100	390	260
12	100	38	76	390	260
13	126	48	100	570	260
14	100	100	100	444	222
15	100	154	46	298	188
16	100	81	93	298	222
17	76	42	86	298	222
18	69	42	444	260	260
19	126	188	342	298	222
20	126	222	260	260	222
21	126	154	138	260	188
22	126	154	188	298	188
23	126	154	188	260	222
24	81	154	154	260	188
25	100	126	154	222	298
26	67	126	298	222	222
27	42	126	222	260	260
28	76	126	222	260	222
29	76	126	260	260	222
30	42	126	260	298	----
31	126	----	222	390	----

NOTE.—Station discontinued February 29, 1916.

Estimated Monthly Discharge of Kishacoquillas Creek at Kulps, Mifflin County

(Drainage area, 190 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	154	42	108	0.57	0.66
November	222	32	100	0.53	0.59
December	444	46	160	0.84	0.97
1916					
January	860	222	370	1.95	2.25
February	504	188	286	1.51	1.63

NOTE.—Station discontinued February 29, 1916.

SUSQUEHANNA BASIN—STATION NO. 33

TUSCARORA CREEK NEAR PORT ROYAL

DESCRIPTION OF STATION

Location.—At single span, steel, through truss, highway bridge about two miles above Port Royal, Juniata County.

Records Available.—Discharge complete from August 21, 1911, to September 30, 1916.

Drainage Area.—205 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the upstream side of the bridge and is read twice daily by G. W. Groninger.

Channel.—Both banks are low but not subject to overflow except during extreme stages, and the bed is composed of gravel and rocks.

Daily Mean Gage Heights, in feet, of Tuscarora Creek near Port Royal, Juniata County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	2.6	2.42	2.5	3.8	4.1	3.3	5.4	3.7	2.3	3.2	2.6	2.47
2	3.4	2.34	2.6	4.8	3.9	3.4	5.0	3.6	2.7	3.1	3.0	2.45
3	3.0	2.42	2.5	5.2	3.8	3.2	4.7	3.5	3.5	3.0	2.8	2.31
4	2.9	2.30	2.6	4.3	3.3	*	4.7	3.5	3.4	3.0	2.6	2.47
5	2.8	2.39	*	4.0	3.5	3.1	4 4	3.5	3.0	2.9	2.8	2.28
6	2.8	2.35	2.6	4.0	3.5	3.0	4.1	3.4	2.8	2.8	2.6	2.45
7	2.7	2.26	2.48	3.6	3.6	3.5	3.9	3.3	4.6	2.8	2.6	2.44
8	2.6	2.44	2.48	3.3	3.1	3.7	3.9	3.3	5.0	2.8	2.6	2.37
9	2.6	2.42	2.5	3.2	3.5	3.3	4.1	3.5	7.3	2.8	2.6	2.6
10	2.6	2.5	*	3.4	3.3	3.3	4.3	3.2	5.6	2.7	2.6	2.31
11	2.5	2.30	-------	3.4	3.2	3.0	4.7	3.2	6.4	2.7	2.43	2.45
12	2.44	2.36	-------	3.5	3.2	3.0	4.4	3.0	5.3	2.7	2.49	2.35
13	2.6	2.35	-------	4.1	3.9	3.1	4.2	3.0	4.6	2.6	2.48	2.34
14	2.41	2.28	-------	4.0	3.6	3.6	4.8	3.0	4.2	3.0	2.6	2.36
15	2.6	2.5	-------	3.4	3.3	3.4	4.5	3.0	4.6	2.8	2.34	4.6
16	2.42	2.8	-------	3.6	3.4	3.2	4.1	2.9	9.2	2.7	2.41	3.3
17	2.41	2.6	-------	*	3.5	3.2	4.0	3.5	‡11.4	2.7	2.39	2.8
18	2.5	2.5	-------	-------	3.6	*	3.8	3.2	6.9	2.8	2.38	2.7
19	2.36	3.0	5.3	-------	3.3	-------	3.7	3.0	6.1	2.8	2.34	2.6
20	2.6	4.2	4.2	-------	3.2	3.5	3.7	3.0	5.5	2.7	2.28	2.6
21	2.7	3.4	3.5	-------	3.4	3.2	3.5	2.8	4.9	2.6	2.37	**
22	2.5	3.1	3.1	-------	3.0	4.0	6.3	2.8	4.7	2.6	2.5	-------
23	2.5	2.9	3.2	-------	3.2	5.6	5.2	3.4	4.1	2.6	2.30	-------
24	2.34	2.8	3.2	-------	3.2	5.0	4.5	3.4	3.9	2.6	2.33	-------
25	2.5	2.7	3.1	-------	3.9	5.3	4.3	3.2	3.8	2.8	2.34	-------
26	2.5	2.7	3.8	-------	4.3	5.9	4.6	3.3	3.6	4.5	2.11	-------
27	2.45	2.7	3.5	3.2	3.8	6.0	4.4	3.2	3.7	3.3	2.8	-------
28	2.6	2.6	3.8	3.4	3.4	†10.9	4.3	3.0	3.7	3.1	2.9	-------
29	2.5	2.6	4.4	3.2	3.5	9.4	4.0	3.0	3.4	2.9	2.8	-------
30	2.5	2.7	4.8	3.6	-------	7.6	3.9	3.0	3.3	2.8	2.6	-------
31	2.36	-------	4.1	4.0	-------	6.2	-------	2.9	-------	2.7	2.47	-------

NOTES.—*Creek frozen December 10 to 11 a. m., December 18, 1915, January 17 to 1 p. m., January 26, and March 18 and 19, 1916, inclusive. Channel blocked with slush ice on December 5, 1915, and March 4, 1916. †Maximum 11.5 feet at 1 p. m. ‡Maximum 11.8 feet at 10 a. m. **Gage removed for repairs to bridge.

Daily Discharge, in Second-feet, of Tuscarora Creek near Port Royal, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	70	47	57	350	465	205	1,210	315	100	180	70	53
2	230	37	70	835	385	230	950	285	85	160	140	50
3	140	47	57	1,080	350	180	780	255	255	140	100	33
4	120	32	70	560	205	*200	780	255	230	140	70	53
5	100	43	*55	425	255	160	615	255	140	120	100	30
6	100	38	70	425	255	140	465	230	100	100	70	50
7	85	27	54	285	285	255	385	205	725	100	70	49
8	70	49	54	205	160	315	385	205	950	100	70	40
9	70	47	57	180	255	205	465	255	2,760	100	70	70
10	70	57	*25	230	205	205	560	180	1,340	85	70	33
11	57	32	25	230	180	140	780	180	1,950	85	48	50
12	49	39	25	255	180	140	615	140	1,140	85	56	38
13	70	38	22	465	385	160	510	140	725	70	54	37
14	45	30	22	425	285	285	835	140	510	140	70	39
15	70	57	22	230	205	230	670	140	725	100	37	725
16	47	100	22	285	230	180	465	120	4,820	85	45	205
17	45	70	20	*180	255	180	425	255	‡8,060	85	43	100
18	57	57	750	170	285	*180	350	180	2,400	120	42	85
19	39	140	1,140	165	205	200	315	140	1,720	100	37	70
20	70	510	510	170	180	255	315	140	1,280	85	30	70
21	85	230	255	175	230	180	255	100	890	70	40	**
22	57	160	160	200	140	425	1,870	100	780	70	57	-------
23	57	120	180	185	180	1,340	1,080	230	465	70	32	-------
24	37	100	180	160	180	950	670	230	385	70	30	-------
25	57	85	160	130	385	1,110	560	180	350	100	37	-------
26	57	85	350	140	560	1,560	725	205	285	670	11	-------
27	50	85	255	180	350	1,610	615	180	315	205	100	-------
28	70	70	350	230	230	†7,240	560	140	315	160	120	-------
29	57	70	615	180	255	5,080	425	140	230	120	100	-------
30	57	85	835	285	-------	3,050	385	140	205	100	70	-------
31	39	-------	465	425	-------	1,790	-------	120	-------	85	53	-------

NOTES.—*Creek frozen December 10 to 11 a. m., December 18, 1915, January 17 to 1 p. m., January 26, and March 18 and 19, 1916, inclusive, and discharge estimated from climatological data. Channel blocked with slush ice on December 5, 1915, and March 4, 1916. **Gage removed for bridge repairs. †Maximum=8,250 second-feet. ‡Maximum=8,790 second-feet. Discharges above 5,905 second-feet are estimated.

Estimated Monthly Discharge of Tuscarora Creek near Port Royal, Juniata County

(Drainage area, 205 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	230	37	72	0.35	0.40
November	510	27	86	0.42	0.47
December	1,140	----------	224	1.09	1.26
1916					
January	1,080	----------	305	1.49	1.72
February	560	140	266	1.30	1.40
March	††8,250	140	917	4.47	4.99
April	1,870	255	634	3.09	3.45
May	315	100	186	0.91	1.05
June	††8,790	85	1,140	5.56	6.20
July	670	70	126	0.61	0.70
August	140	11	63	0.31	0.36

NOTES.—Creek frozen December 10 to 11 a. m., December 18, 1915, January 17 to 1 p. m., January 26, and March 18 and 19, 1916, inclusive, and discharge estimated from climatological data. Channel blocked with slush ice on December 5, 1915, and March 4, 1916. On September 21, 1916, gage removed for bridge repairs. ††Estimated.

SUSQUEHANNA BASIN—STATION NO. 34

JUNIATA RIVER AT NEWPORT

DESCRIPTION OF STATION

Location.—At four span, steel, through truss, highway bridge 800 feet east of Public Square at Newport, Perry County.

Records Available.—Discharge complete from March 21, 1899, to July 14, 1906, and from January 7, 1907, to September 30, 1916.

Drainage Area.—3,380 square miles.

Gage.—A standard chain gage, whose elevation of zero is 363.32 feet above mean sea level, is located on the downstream side of the bridge and is read twice daily by G. A. Sweger.

Channel.—Both banks are high and not subject to overflow, and the bed is composed of hard material.

Discharge Measurements of Juniata River at Newport, Perry County

(Drainage area, 3,380 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
45	Mar. 30	Boehringer & McDowell	8,693	16.20	48,770	Surface method
46	June 16	Boehringer & Reckord	5,247	10.75	25,637	Surface method
47	June 16	Boehringer & Reckord	6,291	12.45	32,835	Surface method
48	June 17	Boehringer & Reckord	9,326	17.34	57,909	Surface method
49	June 17	Boehringer & Brown	10,202	18.73	65,589	Surface method
50	June 18	Boehringer & Brown	10,329	18.93	65,823	Surface method
51	June 18	Boehringer & Brown	9,091	16.99	54,439	Surface method
52	June 30	Reckord & Bowen	1,897	4.94	5,879	0.6 method
53	Sept. 12	Boehringer & Wilson	815	3.06	800	0.6 method

Daily Mean Gage Heights, in feet, of Juniata River at Newport, Perry County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	3.2	3.2	3.4	5.8	5.6	4.5	10.1	5.4	3.9	4.7	3.7	3.2
2	3.4	3.2	3.4	5.6	6.1	4.4	8.8	5.2	3.8	4.5	3.8	3.1
3	3.6	3.1	3.3	7.3	5.8	4.4	8.0	4.9	4.0	4.3	3.8	3.1
4	4.1	3.2	3.3	8.7	5.4	4.3	7.2	4.8	5.1	4.2	3.7	3.1
5	4.2	3.2	3.3	7.1	5.1	4.1	6.9	4.7	5.0	4.1	3.6	3.1
6	3.9	3.1	3.3	6.2	5.0	4.2	6.4	4.6	4.4	4.0	3.9	3.1
7	3.7	3.5	3.2	6.1	4.9	4.5	5.9	4.4	4.6	3.9	3.6	3.5
8	3.6	3.6	3.3	5.4	5.2	4.2	5.6	4.4	5.9	3.8	3.7	3.2
9	3.5	3.3	3.3	4.9	4.7	4.8	5.6	4.4	7.2	3.8	3.7	3.2
10	3.3	3.1	3.1	4.6	4.6	4.6	5.6	4.3	7.2	3.7	3.6	3.2
11	3.4	3.5	3.2	4.6	4.5	4.6	6.3	4.2	8.1	3.7	3.6	3.1
12	3.2	3.5	3.1	4.6	4.5	4.2	6.4	4.1	8.6	3.7	3.5	3.1
13	3.3	3.4	3.1	5.0	4.6	4.3	6.4	4.1	7.2	3.6	3.4	2.91
14	3.2	3.4	3.3	5.8	5.0	4.5	6.6	3.9	6.1	3.6	3.4	3.1
15	3.2	3.2	3.0	5.3	5.8	5.3	7.4	3.9	5.7	3.7	3.4	3.9
16	3.2	3.2	3.3	5.2	5.0	5.3	7.2	3.8	10.5	3.7	3.5	4.2
17	3.2	3.4	3.3	4.5	5.6	5.1	6.6	3.9	†18.6	3.7	3.3	3.8
18	3.2	3.4	3.9	4.1	5.3	4.8	6.1	4.1	17.9	3.6	3.3	3.4
19	3.2	3.3	6.6	3.8	4.8	4.5	5.7	4.4	11.3	3.7	3.3	3.2
20	3.2	3.8	6.4	3.7	4.7	4.4	5.3	4.2	10.2	3.7	3.2	3.1
21	3.8	4.2	5.4	4.1	4.4	4.5	5.2	4.2	8.6	3.6	3.2	3.2
22	3.6	4.1	4.8	4.4	4.4	4.7	6.1	3.9	7.7	3.5	3.1	3.2
23	3.6	4.1	4.4	5.0	4.4	8.1	7.2	4.2	7.0	3.8	3.1	3.4
24	3.5	3.8	4.2	4.9	4.3	10.6	6.4	4.4	6.2	3.7	3.2	3.3
25	3.4	3.7	4.8	4.6	4.7	8.5	5.8	4.5	5.7	3.7	3.1	3.2
26	3.3	3.6	4.3	4.4	5.3	8.4	5.9	4.2	5.5	4.2	3.2	3.2
27	3.3	3.6	4.6	4.4	5.1	9.6	6.3	4.2	5.2	6.6	3.2	2.91
28	3.3	3.5	4.6	4.4	4.6	15.5	6.4	4.5	5.2	5.2	3.2	3.2
29	3.2	3.6	5.0	4.5	4.4	19.7	6.0	3.9	5.5	4.4	3.4	3.1
30	3.1	3.4	5.7	4.4	-------	15.7	5.6	4.4	5.0	4.0	3.2	3.6
31	3.2	-------	6.5	5.0	-------	12.2	-------	4.0	-------	3.8	3.3	-------

NOTE.—†Maximum 20.0 feet at 11 p. m.

Daily Discharge, in Second-feet, of Juniata River at Newport, Perry County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	1,220	1,220	1,570	8,420	7,790	4,450	23,800	7,170	2,730	5,040	2,220	1,220
2	1,570	1,220	1,570	7,790	9,370	4,150	18,700	6,560	2,460	4,450	2,460	1,060
3	1,980	1,060	1,390	13,400	8,420	4,150	15,800	5,640	3,000	3,860	2,460	1,060
4	3,280	1,220	1,390	18,300	7,170	3,860	13,000	5,340	6,250	3,570	2,220	1,060
5	3,570	1,220	1,390	12,700	6,250	3,280	12,000	5,040	5,950	3,280	1,980	1,060
6	2,730	1,060	1,390	9,690	5,950	3,570	10,300	4,740	4,150	3,000	2,730	1,060
7	2,220	1,760	1,220	9,370	5,640	4,450	8,730	4,150	4,740	2,730	1,980	1,760
8	1,980	1,980	1,390	7,170	6,560	3,570	7,790	4,150	8,730	2,460	2,220	1,220
9	1,760	1,390	1,390	5,640	5,040	5,340	7,790	4,150	13,000	2,460	2,220	1,220
10	1,390	1,060	1,060	4,740	4,740	4,740	7,790	3,860	13,000	2,220	1,980	1,220
11	1,570	1,760	1,220	4,740	4,450	4,740	10,000	3,570	16,100	2,220	1,980	1,060
12	1,220	1,760	1,060	4,740	4,450	3,860	10,300	3,280	18,000	2,220	1,760	1,060
13	1,390	1,570	1,060	5,950	4,740	3,860	10,300	3,280	13,000	1,980	1,570	784
14	1,220	1,570	1,390	8,420	5,950	4,450	11,000	2,730	9,370	1,980	1,570	1,060
15	1,220	1,220	910	6,860	8,420	6,860	13,700	2,730	8,100	2,220	1,570	2,730
16	1,220	1,220	1,390	6,560	5,950	5,860	13,000	2,460	25,500	2,220	1,760	3,570
17	1,220	1,570	1,390	4,450	7,790	6,250	11,000	2,730	†64,300	2,220	1,390	2,460
18	1,220	1,570	2,730	3,280	6,860	5,340	9,370	4,150	60,500	1,980	1,390	1,570
19	1,220	1,390	11,000	2,460	5,340	4,450	8,100	4,150	28,800	2,220	1,390	1,220
20	1,220	2,460	10,300	2,220	5,040	4,150	6,860	3,570	24,200	2,220	1,220	1,060
21	2,460	3,570	7,170	3,280	4,150	4,450	6,560	3,570	18,000	1,980	1,220	1,220
22	1,980	3,280	5,340	4,150	4,150	5,040	9,370	2,730	14,700	1,760	1,060	1,220
23	1,980	3,280	4,150	5,950	4,150	16,100	12,000	3,570	12,300	2,460	1,060	1,570
24	1,760	2,460	3,570	5,640	3,860	25,900	10,300	4,150	9,690	2,220	1,220	1,390
25	1,570	2,220	3,860	4,740	5,040	17,600	8,420	4,450	8,100	2,220	1,060	1,220
26	1,390	1,980	3,860	4,150	6,860	17,200	8,730	3,570	7,480	3,570	1,220	1,220
27	1,390	1,980	4,740	4,150	6,250	21,800	10,000	3,570	6,560	11,000	1,220	784
28	1,390	1,760	4,740	4,150	4,740	48,000	10,300	4,450	6,560	6,560	1,220	1,220
29	1,220	1,980	5,950	4,450	4,150	70,600	9,050	2,730	8,420	4,150	1,570	1,060
30	1,060	1,570	8,100	4,150	-------	49,000	7,790	4,150	5,950	3,030	1,220	1,980
31	1,220	-------	10,700	5,950	-------	32,700	-------	3,000	-------	2,460	1,390	-------

NOTE.—†Maximum=72,300 second-feet.

Estimated Monthly Discharge of Juniata River at Newport, Perry County

(Drainage area, 3,380 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	3,570	1,060	1,670	0.49	0.56
November	3,570	1,060	1,780	0.53	0.59
December	11,000	910	3,500	1.04	1.20
1916					
January	18,300	2,220	6,380	1.89	2.18
February	9,370	3,860	5,840	1.73	1.87
March	70,600	3,280	12,900	3.82	4.40
April	23,300	6,560	14,100	4.17	4.65
May	7,170	2,460	3,980	1.18	1.36
June	78,800	2,460	14,300	4.23	4.72
July	11,000	1,760	3,090	0.91	1.05
August	2,730	1,060	1,660	0.49	0.56
September	3,570	784	1,380	0.41	0.46
The year	72,300	784	5,860	1.73	23.60

SUSQUEHANNA BASIN—STATION NO. 35

CONODOGUINET CREEK AT BRYSON'S BRIDGE, CUMBERLAND COUNTY

DESCRIPTION OF STATION

Location.—At two span, wooden covered, highway bridge, 500 feet below Spangler's Mill, near Hogestown, Cumberland County.

Records Available.—Discharge complete from September 26, 1911, to September 30, 1915, and discharge measurements and gage heights from October 1, 1915, to September 30, 1916.

Drainage Area.—460 square miles.

Gage.—A sectional chain gage, whose elevation of zero is arbitrary, is located on the downstream side of the bridge and is read twice daily by Robert D. Hoy.

Channel.—The right bank is fairly high, while the left bank is low, but all water passes under the bridge except at extreme stages. The bed is composed of rocks, gravel and sand.

Remarks.—Silver Spring Creek enters about 500 feet above the bridge.

Discharge Measurements of Conodoguinet Creek at Bryson's Bridge, Cumberland County

(Drainage area, 460 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1915		Sq. ft.	Feet	Sec.-ft.	
25	Oct. 22	Boehringer & Reckord	318	3.06	305	0.6 method
	1916					
26	April 10	Wilson & Shade	664	4.57	1,266	0.6 method
27	April 12	Wilson & Shade	618	4.38	1,109	0.6 method
28	April 18	Wilson & Shade	475	3.79	703	0.6 method
29	April 22	Reckord & Fitzgerald	552	4.06	877	Surface method.
30	June 17	Reckord & Bowen	2,297	11.58	9,781	Surface method
31	June 18	Reckord & Heagy	1,748	9.28	6,029	Surface method
32	July 1	Boehringer & Reckord		3.59	517	0.6 method. Portion of measurement estimated

Daily Mean Gage Heights, in feet, of Conodoguinet Creek at Bryson's Bridge, Cumberland County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	3.4	2.92	2.92	4.4	3.8	3.6	5.5	3.9	3.3	3.6	4.0	3.5
2	4.0	2.88	2.82	5.0	3.9	3.6	5.1	3.8	3.3	3.5	4.4	3.4
3	4.3	2.85	2.88	5.3	3.8	3.5	4.7	3.8	3.4	3.4	4.1	3.2
4	4.0	2.90	2.78	4.8	3.6	3.8	4.6	3.8	3.5	3.4	3.8	3.2
5	3.8	2.92	2.72	4.3	3.7	3.3	4.5	3.8	3.4	3.2	4.0	3.2
6	4.0	2.90	2.82	4.3	3.6	3.3	4.3	3.6	3.3	3.2	3.8	3.2
7	3.6	2.82	2.82	4.0	3.6	3.4	4.1	3.6	3.6	3.2	3.8	3.0
8	3.6	2.88	2.82	3.8	3.7	3.8	4.1	3.5	6.7	3.1	3.7	3.1
9	3.5	2.88	2.72	3.6	3.6	3.8	4.1	3.5	7.2	3.2	4.2	3.0
10	3.4	2.88	2.75	3.9	3.6	3.7	4.6	3.3	7.4	3.2	3.9	3.0
11	3.4	2.88	2.75	3.6	3.4	3.5	4.3	3.3	7.2	3.1	3.7	3.2
12	3.3	2.85	*2.72	3.7	3.4	3.3	4.4	3.2	6.5	3.2	3.5	3.0
13	3.3	2.78	2.78	4.2	3.9	3.4	4.3	3.2	5.4	3.2	3.5	3.1
14	3.2	2.82	2.78	4.5	4.2	3.4	4.2	3.4	4.9	3.1	3.5	2.96
15	3.2	2.82	2.85	4.1	4.2	3.7	4.2	3.2	4.6	3.1	3.4	3.6
16	3.2	3.1	2.85	3.9	4.0	3.5	4.0	3.2	9.1	3.2	3.3	3.3
17	3.1	2.98	3.0	*5.2	5.7	3.5	3.9	3.6	11.8	3.3	3.4	3.5
18	3.1	2.85	4.7	5.4	5.7	4.3	3.8	3.6	9.5	3.3	3.4	3.1
19	3.1	3.2	6.6	5.1	4.1	3.7	3.7	3.4	6.5	3.3	3.4	3.2
20	3.2	3.3	4.8	5.1	4.4	3 9	3.8	3.4	5.9	3.2	3.1	3.1
21	3.3	3.6	4.0	4.8	3.6	3.5	3.7	3.3	5.2	3.2	3.0	3.0
22	3.2	3.3	3.7	3.8	3.4	4.2	4.5	3.2	5.0	3.3	3.3	2.94
23	3.0	3.1	3.6	3.6	3.4	6.4	4.8	3.2	4.6	3.3	3.2	3.2
24	3.0	3.1	3.4	3.4	3.4	5.3	4.3	3.3	4.2	3.2	3.2	3.2
25	2.98	3.0	3.4	3.4	3.9	4.8	4.2	3.5	4.1	3.4	3.1	3.2
26	2.92	3.0	3.8	3.2	4.8	4.9	4.3	3.5	4.0	7.3	3.3	3.1
27	3.0	3.0	3.8	3.2	4.4	4.9	4.3	3.5	3.8	5.8	4.1	3.2
28	3.1	2.92	3.6	3.4	4.8	7.6	4.4	3.4	3.8	5.4	4.1	2.9
29	2.98	2.92	4.4	3.4	4.3	9.3	4.2	3.4	3.8	5.0	3.8	3.1
30	2.95	2.88	5.5	3.6	-------	7.5	4.1	3.3	3.5	4.4	3.6	3.0
31	2.95	-------	5.0	3.8	-------	6.1	-------	3.7	-------	4.1	3.5	-------

NOTE.—*Creek frozen December 12 to 16, 1915, and January 17 to 22, 1916, inclusive.

SUSQUEHANNA BASIN—STATION NO. 36

SUSQUEHANNA RIVER AT HARRISBURG

DESCRIPTION OF STATION

Location.—At 15 span, steel, through truss, highway bridge at Walnut Street, Harrisburg, Dauphin County.

Records Available.—Discharge complete from January 1, 1891, to September 30, 1916. For other records on this river see Susquehanna River at Selinsgrove; also Susquehanna River at McCall Ferry in the 1910-11 Report of the Water Supply Commission.

Drainage Area.—24,100 square miles.

Gage.—A standard chain gage, whose elevation of zero is 289.4 feet above mean sea level, is located on the upstream side of the bridge and is read twice daily by employes of the Water Supply Commission.

Channel.—Both banks are high and not subject to overflow, and the bed is composed of gravel and boulders.

Remarks.—During 1913, 1914, 1915 and 1916 a 4.5 foot dam 4,200 feet below the bridge was under construction, which has caused backwater at the gage. The dam was finally completed on August 29, 1916.

Discharge Measurements of Susquehanna River at Harrisburg, Dauphin County

(Drainage area, 24,100 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1915		Sq. ft.	Feet	Sec.-ft.	
71	Oct. 7	Wilson, Heagy, Bronson & Gough	14,063	4.14	19,213	0.6 method
72	Nov. 8	Wilson, Boehringer, Reckord, Shade & Bronson	12,145	3.42	9,852	0.6 method.
	1916					
73	Jan. 5	Wilson, Knight & Bronson	27,196	9.24	119,654	Surface method
74	Mar. 29	Reckord, Beal & Birkinbine	48,543	17.09	307,715	Surface method
75	Mar. 30	Reckord & Shade	50,425	17.78	332,848	Surface method
76	April 5	Bronson & Shade	35,634	12.24	189,029	Surface method
77	April 7	Reckord, Bronson & Wilson	27,710	9.25	122,174	Surface method
78	April 11	Bronson & Shade	23,400	7.43	83,923	Surface method
79	April 19	Wilson & Bronson	24,328	7.97	96,367	Surface method
80	April 24	Reckord, Fitzgerald, Wilson & Bronson	28,380	9.44	129,455	Surface method
81	May 5	Boehringer, Wilson & Fitzgerald	17,882	5.52	44,113	0.6 method
82	Aug. 15	Reckord & Knight	11,551	3.06	7,112	0.6 method

Daily Mean Gage Heights, in feet, of Susquehanna River at Harrisburg, Dauphin County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	3.42	3.7	4.0	6.0	6.6	4.9	17.1	7.0	5.1	5.3	4.1	3.28
2	3.60	3.67	4.0	5.8	6.9	5.2	16.8	6.5	4.9	4.9	4.0	3.28
3	3.57	3.59	3.9	6.4	7.1	5.0	16.3	6.0	4.7	4.7	3.9	3.25
4	3.56	3.57	3.8	8.8	6.9	4.6	14.4	5.7	6.3	4.7	3.7	3.25
5	3.8	3.53	3.8	9.1	6.3	4.6	12.2	5.5	9.6	4.4	3.51	3.24
6	4.0	3.51	3.69	7.9	5.9	4.6	10.8	5.4	8.5	4.2	3.48	3.24
7	4.1	3.43	3.67	8.3	5.6	4.4	9.3	5.3	7.0	4.1	3.44	3.24
8	4.0	3.41	3.59	9.1	5.2	4.3	8.6	5.2	6.9	4.0	3.57	3.28
9	4.5	3.41	3.55	7.5	5.2	4.6	8.0	5.1	7.6	4.0	3.43	3.28
10	4.4	3.43	3.55	6.6	5.0	4.6	7.7	4.9	8.2	3.9	3.29	3.30
11	4.1	3.45	3.50	6.2	4.8	4.8	7.4	4.8	8.0	4.7	3.24	3.28
12	3.9	3.43	3.32	5.8	4.7	4.8	7.2	4.7	8.2	4.3	3.20	3.26
13	3.8	3.40	3.43	5.7	4.7	4.7	7.3	4.6	7.9	4.1	3.14	3.23
14	3.7	3.36	3.28	6.0	4.8	4.8	7.8	4.5	7.4	3.9	3.11	3.18
15	3.64	3.43	*	6.0	4.8	5.1	12.2	4.4	6.8	3.9	3.05	3.52
16	3.55	3.38	-------	5.6	4.6	4.6	13.1	4.2	7.0	3.9	3.04	3.7
17	3.50	3.45	-------	5.4	4.5	4.5	11.0	4.2	11.1	3.9	3.02	3.9
18	3.46	3.49	-------	5.1	4.6	4.5	9.3	4.3	15.8	4.1	3.00	3.63
19	4.5	3.69	5.0	4.9	4.6	4.4	8.0	5.1	14.0	4.0	3.07	3.48
20	4.3	4.0	6.2	5.2	4.6	4.3	7.3	6.4	11.4	3.9	3.05	3.42
21	4.1	4.2	6.6	5.6	4.6	4.4	6.8	6.0	9.6	3.7	3.10	3.42
22	5.4	4.4	6.2	5.4	4.3	4.6	6.9	5.4	8.8	3.64	3.13	3.43
23	5.2	4.8	5.8	5.5	4.2	4.8	7.5	5.2	7.9	4.2	3.17	3.48
24	4.8	4.8	5.4	6.5	4.3	5.8	9.5	5.1	7.1	3.9	3.19	3.63
25	4.5	4.6	5.1	6.6	4.4	5.8	9.5	5.7	6.6	3.8	3.13	3.7
26	4.3	4.5	5.0	6.5	4.9	5.3	8.5	6.0	6.0	4.4	3.16	3.62
27	4.1	4.4	5.4	6.2	5.0	6.7	7.8	5.7	5.7	6.8	3.32	3.54
28	4.0	4.2	6.3	6.1	5.0	10.5	7.6	5.3	5.6	6.0	3.34	3.66
29	3.9	4.2	6.9	6.2	5.0	†17.2	8.2	5.0	5.6	5.2	3.30	3.8
30	3.8	4.1	6.8	6.7	-------	18.0	7.8	5.1	5.4	4.7	3.29	3.7
31	3.7	-------	6.5	6.7	-------	16.8	-------	5.4	-------	4.3	3.28	-------

NOTE.—*River frozen December 15 to 18, 1915. †Maximum 18.6 feet at midnight.

Daily Discharge, in Second-feet, of Susquehanna River at Harrisburg, Dauphin County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	10,500	12,900	16,800	53,900	66,200	31,700	307,000	74,500	35,700	39,700	18,200	5,500
2	12,300	12,600	16,900	49,800	72,400	37,700	300,000	64,100	31,700	31,700	16,800	5,500
3	12,000	11,700	15,400	62,100	76,500	33,700	288,000	53,900	28,000	28,000	15,400	5,500
4	11,900	11,400	14,100	112,000	72,400	26,200	241,000	47,800	60,000	28,000	12,900	5,500
5	14,700	11,000	14,100	119,000	60,000	26,200	189,000	43,700	130,000	22,800	10,800	5,500
6	17,400	10,800	12,800	93,400	51,900	26,200	157,000	41,700	106,000	19,700	10,500	5,500
7	18,800	10,000	12,600	102,000	45,800	22,800	123,000	39,700	74,500	18,200	10,100	5,500
8	17,400	9,840	11,700	119,000	37,700	21,200	108,000	37,700	72,400	16,800	9,480	5,500
9	25,000	9,840	11,200	84,900	37,700	26,250	95,500	35,700	87,000	16,800	10,000	5,500
10	23,400	10,000	11,200	66,200	33,700	26,200	89,100	31,700	99,700	15,400	8,800	5,500
11	18,800	10,200	10,700	58,000	29,800	29,800	82,800	29,800	95,500	28,000	8,420	5,530
12	15,400	10,000	9,050	49,800	28,000	29,800	78,600	28,000	99,700	21,200	8,110	5,500
13	14,100	9,740	10,000	47,800	28,000	28,000	80,700	26,200	93,400	18,200	7,700	5,500
14	12,900	9,400	8,730	53,900	29,800	29,800	91,200	24,500	82,800	15,400	7,490	5,500
15	12,200	10,000	*6,800	53,900	29,800	35,700	189,000	22,800	70,300	15,400	7,110	5,500
16	11,200	9,570	5,760	45,800	26,200	26,200	210,000	19,700	74,500	15,400	6,670	13,600
17	10,700	10,200	5,760	41,700	24,500	24,500	161,000	19,700	163,000	15,400	6,670	13,600
18	10,300	10,600	6,800	35,700	26,200	24,500	123,000	21,200	275,000	18,200	6,670	13,600
19	24,500	12,800	33,700	31,700	26,200	22,800	95,500	35,700	232,000	16,800	6,670	7,620
20	21,200	16,800	58,000	37,700	26,200	21,200	80,700	62,100	170,000	15,400	6,670	7,630
21	18,200	19,700	66,200	45,800	26,200	22,800	70,300	53,900	130,000	12,900	6,670	7,630
22	41,700	22,800	58,000	41,700	21,200	26,200	72,400	41,700	112,000	12,200	6,670	7,630
23	37,700	29,800	49,800	43,700	19,700	29,800	84,900	37,700	93,400	19,700	6,670	7,630
24	29,800	29,800	41,700	64,100	21,200	49,800	128,000	75,700	76,500	15,400	6,670	7,630
25	24,500	26,200	35,700	66,200	22,800	39,700	128,000	47,800	66,200	14,100	6,670	10,400
26	21,200	24,500	33,700	64,100	31,700	49,800	106,000	53,300	53,900	22,800	6,670	10,400
27	18,200	22,800	41,700	58,000	33,700	68,200	91,200	47,800	47,800	70,300	6,670	8,800
28	16,800	19,700	60,000	54,900	33,700	150,000	87,000	39,700	45,800	53,900	6,670	8,800
29	15,400	19,700	72,400	58,000	33,700	†309,000	99,700	33,700	45,800	37,700	6,670	8,800
30	14,100	18,200	70,300	68,200	-------	329,000	91,200	35,700	41,700	28,000	6,670	8,800
31	12,900	-------	64,100	68,200	-------	300,000	-------	41,700	-------	21,200	6,670	-------

NOTES.—*River frozen December 15 to 18, 1915, and discharge estimated from hydrographs. The discharges from October 1 to 11, 1915, inclusive, are estimated from an interpolated curve necessitated by work on the construction of a low dam 4,200 feet below gaging station. Work on the dam was discontinued until August 16, 1916, when it was resumed and the dam completed on August 29, 1916. From August 16 to September 30, 1916, discharges are estimated from the discharge at the Pennsylvania Water and Power Company's dam at Holtwood, †Maximum—344,000 second-feet.

Estimated Monthly Discharge of Susquehanna River at Harrisburg, Dauphin County

(Drainage area, 24,100 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	41,700	10,300	18,200	0.76	0.88
November	29,800	9,400	15,100	0.63	0.70
December	72,400		28,600	1.19	1.37
1916					
January	119,000	31,700	63,000	2.61	3.01
February	76,500	19,700	37,000	1.54	1.66
March	344,000	21,200	62,100	2.58	2.97
April	307,000	70,300	135,000	5.60	6.25
May	74,500	19,700	39,700	1.65	1.90
June	275,000	28,000	93,100	3.86	4.31
July	70,300	12,200	23,400	0.97	1.12
August	18,200	6,670	8,660	0.36	0.42
September	13,600	5,500	7,500	0.31	0.35
The year	344,000		44,100	1.83	24.94

NOTES.—River frozen December 15 to 18, 1915, and discharge estimated from hydrographs. The discharges from October 1 to 11, 1915, inclusive, are estimated from an interpolated curve necessitated by work on the construction of a low dam 4,200 feet below gaging station. Work on the dam was discontinued until August 16, 1916, when it was resumed and the dam completed on August 29, 1916. From August 16 to September 30, 1916, discharges are estimated from the discharge at the Pennsylvania Water and Power Company's dam at Holtwood.

SUSQUEHANNA BASIN—STATION NO. 37

YELLOW BREECHES CREEK AT OLMSTED'S MILL, CUMBERLAND COUNTY

DESCRIPTION OF STATION

Location.—At single span, steel, through truss, highway bridge just below mill dam about one mile south of White Hill Station, Cumberland County.

Records Available.—Discharge complete from March 23, 1909, to October 31, 1909, and January 22, 1910, to September 30, 1916.

Drainage Area.—223 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the downstream side of the bridge and is read twice daily by J. P. Wrightstone.

Channel.—Both banks are high and not subject to overflow, and the bed is fairly permanent.

Remarks.—The tail-race of the mill on the left bank 300 feet above the bridge comes in a short distance above the left abutment and, when the mill is running all its wheels, water may be raised a little higher at left side of span. Water runs over the dam at all stages. This stream keeps up a remarkably high dry weather flow on account of limestone springs upon its watershed.

Discharge Measurements of Yellow Breeches Creek at Olmsted's Mill, Cumberland County

(Drainage area, 223 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1915		Sq. ft.	Feet	Sec ft.	
30	Oct. 22	Boehringer & Reckord	293	1.36	272	0.6 method
	1916					
31	April 10	Wilson & Shade	442	2.34	601	0.6 method
32	April 12	Wilson & Shade	417	2.08	553	0.6 method
33	April 18	Wilson & Shade	359	1.79	412	0.6 method
34	June 17	Reckord & Bowen	742	4.73	1,951	Surface method
35	July 8	Boehringer & Brown	284	1.16	220	0.6 method

Daily Mean Gage Heights, in feet, of Yellow Breeches Creek at Olmsted's Mill, Cumberland County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	1.4	1.14	1.11	2.1	1.5	1.6	2.7	1.6	1.3	1.3	1.4	1.14
2	2.0	1.10	1.10	1.8	1.5	1.6	2.1	1.6	1.3	1.3	1.3	1.16
3	1.6	1.08	1.08	1.8	1.5	1.6	1.9	1.6	1.4	1.3	1.16	1.14
4	1.5	1.06	1.08	1.8	1.5	1.6	1.9	1.6	1.4	1.2	1.2	1.14
5	1.5	1.16	1.06	1.8	1.5	1.6	1.8	1.6	1.3	1.3	1.3	1.2
6	1.4	1.06	1.08	1.9	1.5	1.6	1.8	1.6	1.2	1.14	1.16	1.14
7	1.4	1.04	1.06	1.9	1.4	1.6	1.8	1.5	1.3	1.10	1.14	1.15
8	1.4	1.04	1.06	1.9	1.4	1.6	2.0	1.5	1.3	1.11	1.14	1.16
9	1.3	1.02	1.06	1.8	1.3	1.6	2.0	1.4	1.4	1.08	1.12	1.14
10	1.2	1.12	1.16	1.8	1.3	1.6	1.9	1.4	1.4	1.2	1.2	1.3
11	1.2	1.02	1.04	1.8	1.3	1.5	1.8	1.3	1.4	1.18	1.12	1.16
12	1.2	1.04	1.04	1.8	1.4	1.5	1.8	1.3	1.4	1.14	1.12	1.14
13	1.19	1.04	1.04	1.8	1.4	1.5	1.6	1.3	1.3	1.2	1.10	1.14
14	1.19	1.05	1.04	1.7	1.4	1.5	1.5	1.3	1.3	1.3	1.11	1.16
15	1.17	1.18	1.04	1.7	1.4	1.5	1.5	1.3	1.5	1.3	1.2	8.1
16	1.19	1.04	1.06	1.7	1.4	1.5	1.4	1.3	1.8	1.16	1.12	4.9
17	1.19	1.04	1.14	1.5	1.5	1.4	1.4	1.3	4.5	1.16	1.11	3.4
18	1.18	1.04	2.8	1.4	1.6	1.4	1.4	1.3	4.3	1.16	1.10	2.3
19	1.19	1.18	2.0	1.4	1.6	1.4	1.4	1.3	3.6	1.15	1.13	1.6
20	2.1	1.5	1.8	1.5	1.5	1.4	1.4	1.3	3.0	1.2	1.2	1.3
21	2.1	1.18	1.7	1.4	1.5	1.4	1.5	1.3	2.4	1.16	1.14	1.16
22	1.5	1.18	1.6	1.4	1.5	2.6	2.1	1.4	2.0	1.9	1.14	1.14
23	1.3	1.18	1.5	1.4	1.4	3.3	1.9	1.5	1.7	1.8	1.18	1.9
24	1.19	1.2	1.3	1.4	1.4	2.5	1.7	1.5	1.5	1.6	1.4	1.6
25	1.19	1.3	1.16	1.4	2.0	1.8	1.7	1.4	1.5	1.8	1.4	1.4
26	1.19	1.2	1.4	1.4	2.0	1.6	1.9	1.4	1.4	3.1	1.2	1.18
27	1.2	1.2	1.4	1.4	1.7	1.7	1.9	1.3	1.4	3.3	1.6	1.16
28	1.2	1.2	1.4	1.4	1.6	3.6	1.7	1.3	1.4	2.4	1.6	1.16
29	1.17	1.2	2.4	1.5	1.6	5.0	1.6	1.3	1.4	1.9	1.4	1.18
30	1.17	1.3	3.2	1.6	-------	4.3	1.4	1.4	1.4	1.8	1.3	1.3
31	1.17	-------	2.7	1.6	-------	3.4	-------	1.3	-------	1.6	1.14	-------

Daily Discharge, in Second-Feet, of Yellow Breeches Creek at Olmsted's Mill, Cumberland County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	305	217	208	580	340	380	840	380	270	270	305	217
2	540	205	205	460	340	380	580	380	270	270	270	223
3	380	199	199	466	340	380	500	380	305	270	223	217
4	340	193	199	460	340	380	500	380	305	235	235	217
5	340	223	199	460	340	380	460	380	270	270	270	235
6	305	193	199	500	340	380	460	380	235	217	223	217
7	305	187	193	500	305	380	460	340	270	205	217	220
8	305	187	193	500	305	380	540	340	270	208	217	223
9	270	181	193	460	270	380	540	305	305	199	211	217
10	235	211	223	460	270	380	500	305	305	235	235	270
11	235	181	187	460	270	340	460	270	305	229	211	223
12	235	187	187	460	305	340	460	270	305	217	211	217
13	232	187	187	460	305	340	380	270	270	235	205	217
14	232	190	187	420	305	340	340	270	270	270	208	223
15	226	229	187	420	305	340	340	270	340	270	235	4,970
16	232	187	193	420	305	340	305	270	460	223	211	2,000
17	232	187	217	340	340	305	305	270	1,760	223	208	1,160
18	229	187	885	305	380	305	305	270	1,640	223	205	660
19	232	229	540	305	380	305	305	270	1,260	220	214	380
20	580	340	460	340	340	305	305	270	975	235	235	270
21	580	229	420	305	340	305	340	270	705	223	217	223
22	340	229	380	305	340	795	580	305	540	500	217	217
23	270	229	340	305	305	1,110	500	340	420	460	229	500
24	232	235	270	305	305	750	420	340	340	380	305	380
25	232	270	223	305	540	460	420	305	340	460	305	305
26	232	235	305	305	540	380	500	305	305	1,020	235	229
27	235	235	305	305	420	420	500	270	305	1,110	380	223
28	235	235	305	305	380	1,260	420	270	305	705	380	223
29	226	235	705	340	380	2,060	380	270	305	500	305	229
30	226	270	1,060	380	-------	1,640	305	305	305	460	270	270
31	226	-------	840	380	-------	1,160	-------	270	-------	380	217	-------

NOTE.—Discharge above 4,850 second-feet is estimated.

Estimated Monthly Discharge of Yellow Breeches Creek at Olmsted's Mill, Cumberland County

(Drainage area, 223 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	580	226	291	1.30	1.50
November	340	181	217	0.97	1.08
December	1,060	187	335	1.50	1.73
1916					
January	580	305	397	1.78	2.05
February	540	270	344	1.54	1.66
March	2,060	305	561	2.52	2.90
April	840	305	442	1.98	2.21
May	380	270	307	1.38	1.59
June	1,760	235	475	2.13	2.38
July	1,110	199	352	1.58	1.82
August	380	205	245	1.10	1.27
September	††4,970	217	512	2.30	2.57
The year	††4,970	181	373	1.67	22.76

NOTE.—††Estimated.

SUSQUEHANNA BASIN—STATION NO. 38

SWATARA CREEK AT JONESTOWN

DESCRIPTION OF STATION

Location.—At two span, steel, through truss, highway bridge at Jonestown, Lebanon County.

Records Available.—Discharge complete from November 21, 1910, to September 30, 1914, and discharge measurements and gage heights from October 1, 1914, to September 30, 1916.

Drainage Area.—190 square miles.

Gage.—A sectional chain gage, whose elevation of zero is 388.75 feet above mean sea level, is located on the downstream side of the bridge and is read twice daily by employes of the Lebanon Valley Consolidated Water Supply Company.

Channel.—Both banks are low but water passes under the bridge at all stages, and the bed is composed of gravel and culm.

Remarks.—There is a mill dam about 6 miles above, which stores water at night. This station is maintained in co-operation with the Lebanon Valley Consolidated Water Supply Company.

Discharge Measurements of Swatara Creek at Jonestown, Lebanon County

(Drainage area, 190 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
26	April 19	Boehringer	300	4.16	436	0.6 method
27	July 6	Boehringer & Brown	196	3.50	152	0.6 method

Daily Mean Gage Heights, in feet, of Swatara Creek at Jonestown, Lebanon County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	3.28	3.35	3.32	4.8	4.3	4.4	4.5	4.4	3.7	3.9	3.8	3.20
2	3.32	3.30	3.30	4.8	4.4	4.4	4.7	4.2	3.5	3.8	3.8	3.00
3	3.30	3.30	3.42	4.8	4.1	4.3	4.1	4.1	3.5	3.8	3.8	3.20
4	3.28	3.30	3.40	4.8	4.0	4.3	4.5	4.2	3.8	3.7	3.8	3.20
5	3.45	3.31	3.35	4.7	4.0	4.2	4.6	4.1	3.7	3.7	3.7	3.10
6	3.7	3.30	3.30	4.7	4.2	4.4	4.5	4.0	3.8	3.6	3.7	3.10
7	3.6	3.30	3.30	4.8	4.2	4.4	4.3	4.0	3.8	3.4	3.6	3.20
8	3.42	3.30	3.30	4.8	4.2	4.4	4.3	4.0	3.8	3.30	3.40	3.5
9	3.40	3.25	3.20	4.8	4.2	4.4	4.3	3.9	3.7	3.30	3.40	3.40
10	3.08	3.20	3.02	4.6	4.1	4.2	4.1	3.8	3.7	3.30	3.40	3.20
11	3.30	3.30	3.10	4.8	4.1	4.4	4.1	3.8	3.6	3.6	3.5	3.20
12	3.30	3.30	3.10	4.7	4.0	4.4	3.9	3.8	3.6	3.5	3.5	3.20
13	3.30	3.30	3.30	4.7	4.1	4.3	3.9	3.8	3.5	3.40	3.40	3.20
14	3.30	3.30	*3.30	4.6	4.0	4.4	4.0	3.7	3.5	3.5	3.40	3.20
15	3.10	3.6	3.22	4.4	3.9	4.4	4.1	3.6	3.7	3.6	3.40	3.20
16	3.30	3.6	3.20	4.4	3.6	4.5	4.5	3.6	††5.8	††3.6	3.40	††3.5
17	3.30	3.48	4.4	4.3	3.5	4.4	4.3	3.9	7.7	3.5	3.40	3.5
18	3.30	3.40	4.6	4.3	3.1	4.4	4.3	3.8	6.6	3.5	3.40	3.40
19	3.30	3.5	4.6	*4.3	3.6	4.3	4.2	3.7	6.4	3.5	3.30	3.40
20	3.38	3.5	4.1	4.2	3.9	4.2	4.1	3.6	6.2	3.5	3.30	3.30
21	3.6	3.48	3.9	4.4	4.0	4.5	4.1	3.5	6.1	3.5	3.30	3.20
22	3.30	3.42	3.8	4.7	4.0	4.5	4.5	3.5	6.0	3.40	3.20	3.20
23	3.36	3.38	3.8	4.6	4.0	4.4	4.2	4.1	5.9	3.40	3.20	3.8
24	3.30	3.38	3.8	4.6	4.1	4.2	4.5	4.2	5.8	3.40	3.20	3.7
25	3.30	3.32	3.8	4.5	4.1	4.1	3.7	4.2	5.6	3.40	3.20	3.6
26	3.30	3.30	4.4	4.5	4.0	4.2	4.0	4.0	5.0	3.5	3.20	3.40
27	3.6	3.30	4.4	4.4	3.1	5.8	4.1	4.0	4.6	3.40	3.20	3.40
28	3.5	3.30	4.5	4.4	3.1	6.4	4.0	4.2	4.4	3.40	3.20	3.40
29	3.42	3.30	5.0	4.4	3.8	7.7	4.0	4.2	4.2	3.40	3.20	3.6
30	3.30	3.20	4.8	4.2	-------	6.2	4.7	4.3	4.0	3.40	3.20	3.5
31	3.40	-------	4.8	4.3	-------	6.2	4.6	4.3	-------	3.40	3.20	-------

NOTES.—*Creek frozen December 14 to 18, 1915, and January 19 to 21, 1916, inclusive ††Estimated.

SUSQUEHANNA BASIN—STATION NO. 39

CODORUS CREEK AT YORK

DESCRIPTION OF STATION

Location.—At three span, steel, through truss, highway bridge known as South Penn Street Bridge, York, York County.

Records Available.—Discharge measurements and gage heights from October 7, 1915, to September 30, 1916.

Drainage Area.—221 square miles.

Gage.—A standard chain gage, whose elevation of zero is 351.79 feet above mean sea level, is located on the downstream side of the bridge and is read twice daily by the Schmidt and Ault Paper Company.

Channel.—The right bank is high and does not overflow, the left bank is high but may overflow during extreme stages, and the bed is composed of mud and gravel.

Remarks.—There is a dam about 250 feet above and riffle about 800 feet below the station which act as control points.

Discharge Measurements of Codorus Creek at York, York County

(Drainage area, 221 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1915		Sq. ft.	Feet	Sec.-ft.	
1	Oct. 7	Boehringer & Reckord	145	1.30	129	0.6 method
	1916					
2	Mar. 28	Langenheim & Anthony	860	5.62	1,770	Surface method
3	Mar. 29	Langenheim & Anthony	1,138	7.00	2,627	Surface method
4	Mar. 29	Langenheim & Anthony	1,015	6.50	2,177	Surface method
5	May 18	Boehringer & Wilson	179	1.48	187	0.6 method
6	Sept. 13	Boehringer & Wilson	80	0.82	62	0.6 method

Daily Mean Gage Heights, in feet, of Codorus Creek at York, York County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	-------	1.1	0.92	2.3	1.5	1.7	3.2	1.6	1.3	1.1	1.6	0.86
2	-------	1.0	0.95	††2.4	1.7	1.8	††3.2	1.6	1.1	1.2	1.4	0.99
3	-------	0.92	1.0	2.4	1.7	1.8	3.1	1.6	1.3	1.2	1.2	1.1
4	-------	1.0	0.97	2.2	1.5	1.6	2.8	1.6	‖1.2	1.2	1.2	1.2
5	-------	1.1	‖0.95	2.2	1.5	‖1.6	2.6	1.6	1.1	1.2	1.2	1.2
6	-------	1.2	0.93	2.0	‖1.6	1.6	2.4	1.6	1.2	1.2	1.7	1.1
7	1.3	‖1.1	0.80	1.8	1.7	1.9	2.2	‖1.6	1.2	1.1	1.6	1.0
8	1.4	1.0	0.68	1.6	1.7	2.1	2.3	1.6	1.3	0.91	1.6	1.1
9	1.3	0.93	0.69	‖1.5	1.7	1.9	††2.5	1.6	1.4	1.2	1.4	1.2
10	1.3	1.0	0.64	1.4	1.7	1.8	2.6	1.4	1.3	1.1	1.3	1.7
11	1.3	0.82	0.72	2.1	1.5	1.6	2.4	1.5	††1.4	1.1	1.3	1.4
12	1.3	1.1	‖0.80	2.1	1.6	‖1.6	2.3	1.4	1.4	0.96	1.2	1.1
13	0.92	1.2	0.87	2.2	‖1.7	1.6	2.3	1.3	1.2	0.93	1.3	0.93
14	1.2	††1.2	0.90	2.0	1.8	1.8	2.3	††1.4	1.2	1.1	1.3	1.1
15	1.1	1.6	0.82	1.4	1.8	2.1	2.1	1.4	1.5	1.1	1.2	2.1
16	0.98	1.3	1.0	††1.6	1.9	1.8	††2.0	1.4	2.1	1.3	1.0	1.7
17	††1.1	1.1	1.8	1.7	2.0	1.6	2.0	1.6	2.2	1.2	1.0	1.8
18	1.3	1.2	3.9	1.6	2.0	1.5	1.9	1.4	††1.8	1.0	1.0	1.3
19	1.0	1.5	2.8	1.5	2.0	‖1.6	1.8	1.5	1.5	1.1	1.0	1.2
20	1.5	1.2	1.6	1.5	‖1.9	1.7	1.9	1.4	1.1	0.91	1.0	1.1
21	1.4	‖1.2	1.5	1.6	1.8	1.6	1.9	‖1.4	1.2	0.91	1.1	1.1
22	1.2	1.2	1.5	1.6	1.7	4.0	2.1	1.4	1.5	0.85	0.92	1.0
23	1.1	1.2	1.5	††1.6	1.6	2.5	††2.0	1.6	1.3	1.2	1.0	3.1
24	‖1.1	1.2	1.5	1.7	1.7	2.4	1.8	1.6	1.0	1.1	1.5	2.1
25	1.1	1.0	1.4	1.5	2.0	2.2	1.8	1.6	‖1.1	3.8	1.2	1.7
26	1.0	1.1	1.8	1.5	1.9	††2.2	1.8	1.3	1.2	3.7	1.2	1.6
27	1.2	1.1	1.6	1.4	‖1.9	2.3	2.0	1.3	1.2	1.8	1.5	1.2
28	1.1	††1.2	1.9	1.5	1.9	4.9	1.8	††1.4	0.95	3.4	1.7	1.0
29	1.1	1.2	3.5	1.5	1.9	6.6	1.6	1.4	1.1	1.9	1.3	1.4
30	1.3	1.1	3.4	††1.6	-------	4.6	‖1.6	1.3	0.86	1.6	0.95	1.2
31	1.3	-------	2.4	1.6	-------	3.7	-------	1.3	-------	1.6	1.0	-------

NOTES.—‖Interpolated. ††Estimated.

OHIO BASIN

ALLEGHENY RIVER AT LARABEE

DESCRIPTION OF STATION

Location.—At single span, steel, through truss, highway bridge on highway between Larabee and Coryville, McKean County.

Records Available.—Discharge measurements and gage heights from June 29, 1915, to September 30, 1916. For other records on this river see Allegheny River at Franklin, Kittanning and Freeport; also Allegheny River at Red House, N. Y., in the 1911 to 1914 reports of the Water Supply Commission.

Drainage Area.—545 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the upstream side of the bridge and is read twice daily by Rufus Hosley.

Channel.—The right bank is high and not subject to overflow, the left bank is low and overflows, and the bed is composed of mud, gravel and stone.

Remarks.—This station is maintained in co-operation with the U. S. Engineer Office in Pittsburgh.

Discharge Measurements of Allegheny River, at Larabee, McKean County

(Drainage area, 545 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1915		Sq. ft.	Feet	Sec.-ft.	
2	Oct. 1	Gough & Bronson	291	1.36	190	0.6 method
	1916					
3	Aug. 10	Wilson & Brown	231	0.75	89	0.6 method

Daily Mean Gage Heights, in feet, of Allegheny River at Larabee, McKean County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	1.4	2.0	3.8	5.0	8.0	3.5	13.2	7.3	3.2	3.0	0.8	0.7
2	2.2	1.9	3.6	8.9	7.3	3.2	13.0	6.3	3.4	2.8	0.8	0.7
3	2.2	1.9	3.4	11.3	6.5	2.9	12.6	5.9	9.4	3.2	0.7	0.7
4	1.8	1.8	3.1	10.3	5.7	2.8	11.9	6.0	12.3	2.7	0.8	0.6
5	5.9	2.0	2.9	9.7	5.4	2.9	11.2	5.2	11.7	2.3	0.9	0.9
6	8.5	1.9	2.9	11.2	5.2	2.8	10.4	4.9	10.4	2.0	0.9	1.0
7	7.0	1.8	2.9	11.4	4.3	3.6	9.1	4.7	8.2	1.8	0.9	0.9
8	5.4	1.6	2.7	10.3	4.1	5.4	7.9	4.3	8.1	1.7	0.9	1.7
9	4.6	1.5	2.5	8.8	4.4	5.2	7.4	4.4	7.2	1.7	0.9	1.4
10	4.0	1.5	2.5	7.2	*4.5	4.6	6.8	3.8	7.7	1.7	0.7	1.0
11	3.6	1.5	2.9	6.2	4.6	4.1	6.6	3.5	10.0	1.4	0.8	0.8
12	3.2	1.5	*2.7	4.8	4.6	3.8	7.6	3.3	11.4	1.4	‡2.5	0.6
13	2.8	1.6	3.3	6.7	4.3	3.8	8.8	3.2	10.7	2.6	1.2	0.6
14	2.6	1.5	2.8	6.0	4.0	4.2	11.4	3.1	9.2	†5.4	1.0	0.6
15	3.7	1.2	2.7	*5.2	3.9	3.5	13.4	3.0	8.4	2.7	0.8	1.7
16	3.6	2.4	2.8	6.4	3.9	3.2	12.9	3.4	10.0	1.9	0.8	1.4
17	3.0	2.2	3.1	5.8	3.7	3.8	11.4	10.2	11.1	1.8	0.8	1.0
18	2.6	2.0	6.4	4.8	3.6	3.4	10.4	10.8	11.8	1.8	0.8	0.8
19	4.7	2.6	8.1	4.7	3.4	3.5	8.8	9.4	11.7	1.6	0.8	0.7
20	5.0	5.8	6.8	4.6	3.2	3.3	7.3	7.6	11.2	1.4	0.6	0.7
21	4.4	5.8	5.3	5.0	3.0	3.2	9.6	6.1	10.0	1.2	0.7	0.7
22	4.0	5.8	5.5	6.7	2.7	3.2	11.3	5.2	9.2	1.5	0.7	0.6
23	3.6	5.2	5.4	8.4	3.3	3.2	12.4	6.6	7.3	1.6	0.7	0.6
24	3.3	4.7	5.1	8.1	3.5	3.2	12.0	6.2	6.2	1.3	0.8	0.5
25	2.9	4.5	5.3	7.2	3.8	3.4	11.5	5.6	5.9	1.1	0.6	0.8
26	2.9	4.2	9.2	6.2	4.2	5.3	10.5	5.4	5.6	0.9	0.7	0.7
27	2.8	4.2	7.5	6.3	3.7	10.4	9.9	5.4	5.0	1.0	0.7	0.7
28	2.5	4.4	6.7	6.5	3.4	13.8	10.3	5.0	4.2	1.0	0.7	0.6
29	2.4	4.1	5.9	6.4	3.5	14.8	9.6	4.5	3.5	1.0	0.8	0.6
30	2.2	4.0	5.6	6.0	-------	13.9	8.5	4.1	3.3	1.0	0.6	1.2
31	2.2	---- --	5.3	6.6	-------	13.3	-------	3.9	-------	0.8	0.8	-------

NOTES—*River frozen December 12, 1915, to January 2, 1916, January 15 to 25, and February 10 to noon March 28, 1916. †Maximum estimated 5.9 feet at 3 a. m. ‡Maximum 3.1 feet at 6:15 a. m.

OHIO BASIN—STATION NO. 2

KINZUA CREEK AT DEWDROP

DESCRIPTION OF STATION

Location.—At single span, steel, through truss, highway bridge at Dewdrop, Warren County, 3 miles above the mouth.

Records Available.—Discharge complete from November 1, 1909, to November 20, 1911, and July 22, 1912, to March 31, 1916.

Drainage Area.—171 square miles.

Gage.—A standard chain gage, whose elevation of zero was arbitrary, was located on the downstream side of the bridge, and was read once daily, except Sundays, by C. R. Morrison.

Channel.—Both banks overflow at extreme stages, and the bed is composed of rocks and gravel.

Remarks.—Station discontinued March 31, 1916.

Daily Mean Gage Heights, in feet, of Kinzua Creek at Dewdrop, Warren County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
1	1.6	1.6	2.4	††2.7	3.6	-------
2	1.8	1.6	2.4	††4.6	3.0	-------
3	††2.0	1.6	2.3	4.0	2.8	-------
4	1.47	1.5	2.2	3.6	2.6	-------
5	3.9	1.6	‖2.1	4.0	2.4	-------
6	2.8	1.5	2.0	5.6	‖2.2	-------
7	2.5	††1.5	1.9	4.6	2.0	-------
8	2.4	1.45	1.9	3.6	2.0	-------
9	2.3	1.37	1.7	‖3.6	2.1	-------
10	††2.8	1.32	1.7	3.6	2.1	-------
11	1.9	1.32	1.6	3.1	2.2	-------
12	1.8	1.45	‖1.7	3.0	2.2	-------
13	1.7	1.47	1.8	3.6	††2.4	-------
14	2.0	††1.6	1.9	3.0	*	-------
15	2.8	1.7	1.9	2.6	-------	-------
16	2.4	1.9	1.9	††2.6	-------	-------
17	2.3	2.0	2.0	2.5	-------	-------
18	2.4	2.1	4.0	2.4	-------	-------
19	2.7	2.6	‖3.4	2.2	-------	-------
20	2.3	3.0	2.8	2.5	-------	-------
21	2.2	‖2.9	2.7	2.6	-------	-------
22	2.0	2.8	2.6	3.0	-------	-------
23	1.9	2.5	2.6	‖3.2	-------	-------
24	††1.9	2.4	2.6	3.4	-------	-------
25	1.8	††2.4	2.7	3.5	-------	-------
26	1.8	2.3	‖2.8	3.3	-------	-------
27	1.8	2.4	2.9	3.2	-------	-------
28	1.7	††2.4	2.8	3.0	-------	7.0
29	1.7	2.5	2.7	3.0	-------	6.8
30	1.6	2.5	2.7	††3.2	-------	6.0
31	‖1.6	-------	2.5	3.3	-------	6.0

NOTES.—*Creek frozen February 14 to March 27, 1916, inclusive. ‖Interpolated. ††Estimated. Station discontinued March 31, 1916.

Daily Discharge, in Second-feet, of Kinzua Creek at Dewdrop, Warren County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
1	146	146	381	512	992	220
2	192	146	381	1,670	658	220
3	246	146	343	1,250	558	220
4	123	128	308	992	467	220
5	1,180	146	276	1,250	381	220
6	558	128	246	2,520	308	220
7	423	128	218	1,670	246	260
8	381	120	218	992	246	260
9	343	108	168	992	276	260
10	558	101	168	992	278	220
11	218	101	146	708	308	220
12	192	120	168	656	308	250
13	168	123	192	992	381	250
14	246	146	218	656	*270	220
15	558	168	218	467	270	220
16	381	218	218	467	270	220
17	343	246	246	423	270	220
18	381	276	1,250	381	270	180
19	512	467	875	308	225	180
20	343	658	558	423	225	180
21	308	606	512	467	225	170
22	246	558	467	656	225	170
23	218	423	467	762	225	170
24	218	381	467	875	240	220
25	192	381	512	933	240	280
26	192	343	558	818	240	450
27	192	381	606	762	220	1,000
28	168	381	558	656	220	3,820
29	168	423	512	656	220	3,630
30	146	423	512	762	-------	2,880
31	146	-------	423	818	-------	2,880

NOTES—*Creek frozen February 14 to March 27, 1916, inclusive, and discharge estimated from climatological data. Station discontinued March 31, 1916.

Estimated Monthly Discharge of Kinzua Creek at Dewdrop, Warren County

(Drainage area, 171 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	1,180	123	624	3.65	4.21
November	656	101	271	1.58	1.76
December	1,250	146	400	2.34	2.70
1916					
January	2,520	308	854	4.99	5.75
February			319	1.87	2.02
March	3,820		649	3.80	4.38

NOTES—Creek frozen February 14 to March 27, 1916, inclusive, and discharge estimated from climatological data. Station discontinued March 31, 1916.

OHIO BASIN—STATION NO. 3

CONEWANGO CREEK AT FREWSBURG, N. Y.

DESCRIPTION OF STATION

Location.—At Whitman's Bridge, a single span, steel, through truss, highway bridge, about one mile above Frewsburg, Chautauqua County, N. Y.

Records Available.—Discharge measurements and gage heights from November 1, 1909, to September 30, 1916.

Drainage Area.—690 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the upstream side of the bridge and is read once daily by Freeland P. Hobart.

Channel.—The right bank is a wide, low meadow; both banks overflow during high stages, and the bed is composed of clay and gravel.

Discharge Measurements of Conewango Creek at Frewsburg, Chautauqua County, N. Y.

(Drainage area, 690 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1915		Sq. ft.	Feet	Sec.-ft.	
15	Oct. 2	Gough & Bronson	818	2.34	656	0.6 method
	1916					
16	July 19	Wilson & Weaver	738	1.48	385	0.6 method

Daily Mean Gage Heights, in feet, of Conewango Creek at Frewsburg, Chautauqua County, N. Y., for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	1.7	2.0	5.4	5.1	7.2	3.4	14.6	6.3	4.1	2.2	0.70	0.42
2	2.7	2.6	4.9	9.7	7.1	3.4	14.2	5.6	3.4	2.0	0.85	‖0.40
3	3 8	2.5	4.4	10.9	5.4	3.3	13.5	5.3	4.7	5.9	0.80	0.37
4	3.4	2.0	4.3	11.3	4.8	3.1	12.9	6.1	4.2	6.0	0.78	0.36
5	5.4	2.0	4.2	11.5	4.5	3.1	12.0	5.8	3.4	4.4	0.80	0.42
6	5.4	2.5	4.0	12.4	4.4	3.0	10.7	5.1	3.2	3.1	0.82	0.51
7	4.6	1.9	3.8	12.4	4.1	3.3	8.5	4.6	3.0	2.5	0.68	1.6
8	3.7	1.9	3.8	11.9	3.6	4.4	7.0	4.6	3.1	2.3	0.60	2.6
9	2.9	1.8	3.7	10.7	4.0	4.8	6.3	4.3	3.3	2.1	0.58	2.0
10	4.7	1.8	3.6	7.9	*4.2	-------	6.1	4.0	4.1	1.9	0.62	1.6
11	4.6	1.8	3.5	7.0	4.1	4.3	6.0	3.7	5.2	1.8	0.61	1.40
12	4.2	1.8	3.4	6.4	4.0	4:3	6.2	3.7	5.5	1.7	0.65	1.15
13	3.7	1.9	3.6	7.7	3.8	4.2	7.0	3.4	4.4	1.8	0.70	1.00
14	2.8	1.9	3.6	7.0	3.4	4.2	10.7	3.2	3.4	2.4	0.84	0.85
15	4.4	2.2	3.2	6.9	3.6	4.1	11.6	3.1	3.3	2.8	0.80	0.83
16	5.2	2.3	3.5	††6.4	3.4	4.0	11.8	5.3	7.0	2.2	0.78	0.82
17	5.5	2.4	3.5	††6.1	3.4	4.1	11.1	6.4	6.0	1.8	0.75	0.89
18	5.4	2.3	8.8	*5.8	3.0	3.7	9.9	5.7	5.1	1.6	0.59	0.85
19	5.7	2.4	9.7	5.8	3.1	3.7	8.0	5.0	5.2	1.5	††0.60	0.80
20	5.6	4.6	††9.2	5.6	3.0	3.7	7.1	4.2	6.5	1.30	††0.60	0.75
21	5.0	5.3	8.0	5.6	3.0	3.6	9.2	3.8	5.8	1.30	0.55	0.76
22	4.1	5.8	6.0	9.5	3.2	3.7	11.0	3.4	5.2	1.30	0.56	0.75
23	3.6	5.2	5.2	9.9	3.2	3.6	12.3	5.6	4.3	1.25	0.62	0.65
24	3.2	4.9	5.1	10.0	3.3	3.6	12.1	6.4	3.6	1.20	0.55	0.70
25	2.9	4.8	7.2	7.4	3.6	3.6	11.1	4.9	3.4	1.10	0.60	0.78
26	2.6	5.7	9.3	6.9	3.6	4.8	10.5	4.4	3.2	1.05	0.50	0.68
27	‖2.5	7.7	9.3	6.2	-------	10.7	10.0	3.8	2.8	0.94	0.56	0.60
28	2.4	8.7	6.2	6.3	2.9	13.5	9.8	4.5	2.5	1.00	0.53	0.70
29	2.3	8.8	5.7	5.8	3.4	15.3	8.8	4.8	2.3	0.90	0.50	0.70
30	2.2	7.9	5.2	5.2	-------	15.4	7.1	4.2	2.2	0.72	0.42	0.70
31	2.2	-------	5.4	5.4	-------	15.1	-------	4.2	-------	0.60	0.38	-------

NOTES—*Creek frozen January 18 to 22, and February 10 to March 25, 1916, inclusive. ‖Interpolated. ††Estimated.

OHIO BASIN—STATION NO. 4

BROKENSTRAW CREEK AT YOUNGSVILLE

DESCRIPTION OF STATION

Location.—At single span, steel, through truss, highway bridge at Youngsville, Warren County, about 3 miles above the mouth.

Records Available.—Discharge complete from November 1, 1909, to September 30, 1915, and discharge measurement and gage heights from October 1, 1915, to September 30, 1916.

Drainage Area.—290 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the downstream side of the bridge and is read twice daily by W. F. Schnell.

Channel.—The right bank is high and does not overflow, while the left bank overflows at high stages for a short distance under approach trestle. The bed is composed of clay and gravel, the section is deep and the current sluggish.

Remarks.—At gage height approximately 10 feet water leaves the regular creek channel about one-fourth mile above the gaging station and discharges through a flood channel to the west.

Discharge Measurement of Brokenstraw Creek at Youngsville, Warren County

(Drainage area, 290 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
19	1916 July 19	Wilson & Weaver	Sq. ft. 408	Feet 0.70	Sec.-ft. 117	0.6 method

Daily Mean Gage Heights, in feet, of Brokenstraw Creek at Youngsville, Warren County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	0.5	0.30	1.7	1.7	2.9	0.5	5.7	1.6	1.9	0.40	—0.20	—0.2[illegible]
2	1.0	0.30	1.5	6.0	2.3	0.6	4.6	1.4	1.5	0.40	—0.20	—0.2[illegible]
3	0.9	0.35	1.4	5.3	1.4	0.6	4.4	1.3	1.3	0.40	—0.20	—0.20
4	0.7	0.40	1.4	4.0	1.3	0.5	3.9	2.2	0.9	0.40	—0.10	—0.20
5	2.2	0.30	1.2	4.2	1.0	0.5	3.4	1.8	0.8	0.40	—0.10	—0.20
6	1.6	0.5	1.1	5.8	1.0	0.42	2.9	1.4	0.8	0.40	—0.10	—0.20
7	1.1	0.30	1.1	4.9	0.9	0.8	2.4	1.2	0.8	0.38	—0.15	—0.20
8	0.9	0.30	1.0	2.0	0.6	1.6	1.8	1.0	1.3	0.35	—0.15	0.6
9	0.8	0.25	1.0	1.9	0.9	1.6	1.4	1.0	2.4	0.30	—0.15	0.20
10	2.0	0.15	0.9	1.9	0.8	1.2	1.4	0.8	2.0	0.30	—0.15	0.15
11	1.9	0.05	0.8	2.0	0.8	1.2	1.2	0.7	1.6	0.25	—0.20	0.15
12	1.3	0.00	0.6	1.8	0.8	1.2	1.4	0.6	1.3	0.25	—0.20	0.10
13	0.9	0.05	0.6	3.2	0.6	1.2	1.8	0.5	1.1	0.25	—0.20	0.05
14	0.9	0.25	0.6	2.4	0.3	1.2	6.4	0.43	0.9	1.2	—0.20	0.05
15	2.5	0.45	0.6	1.3	0.45	0.9	5.6	0.6	0.9	0.9	—0.20	0.00
16	2.1	0.7	0.3	1.7	0.5	0.8	3.4	1.2	2.3	0.6	—0.20	0.00
17	1.9	0.7	1.5	1.0	0.6	0.9	2.7	0.9	3.5	0.5	—0.20	—0.05
18	1.5	0.6	5.6	1.0	5.6	0.8	2.8	0.8	2.9	0.28	—0.20	—0.10
19	2.0	1.4	4.2	1.2	0.5	0.7	2.1	0.8	2.5	0.21	—0.20	—0.10
20	1.9	2.7	3.4	1.0	0.6	0.7	2.2	0.7	2.5	0.30	—0.20	—0.10
21	1.4	2.3	2.8	2.2	0.5	0.7	3.8	0.8	1.9	0.25	—0.20	—0.10
22	1.2	2.0	2.0	4.0	0.6	0.7	5.0	0.7	2.0	0.18	—0.20	—0.15
23	1.0	1.9	1.8	4.0	0.6	0.6	4.1	0.8	1.7	0.10	—0.20	—0.15
24	0.9	2.8	1.9	3.0	0.7	0.6	3.1	1.9	1.4	0.09	—0.20	—0.15
25	0.7	2.5	3.6	1.8	0.9	0.6	2.3	1.7	1.3	0.05	—0.20	—0.15
26	0.6	2.6	3.5	1.6	0.9	2.0	2.4	1.7	0.9	0.00	—0.20	—0.20
27	0.40	3.8	3.0	1.6	0.7	6.2	3.7	1.5	0.6	—0.05	—0.20	—0.20
28	0.40	4.5	2.6	1.8	0.5	8.4	4.2	0.9	0.5	—0.10	—0.20	—0.20
29	0.40	3.5	2.2	1.7	0.45	8.0	3.2	2.0	0.41	—0.15	—0.20	0.00
30	0.40	2.4	1.8	1.5	-------	6.6	2.0	1.4	0.41	—0.20	—0.20	0.30
31	0.30	-------	1.6	1.9	-------	6.1	-------	1.4	-------	—0.20	—0.20	-------

OHIO BASIN—STATION NO. 5

TIONESTA CREEK AT BUTLER BRIDGE, FOREST COUNTY

DESCRIPTION OF STATION

Location.—At three span, highway bridge, about two miles above Nebraska, Forest County.

Records Available.—Discharge measurements and gage heights from July 26, 1912, to September 30, 1916.

Drainage Area.—420 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the downstream side of the bridge and is read once daily by Mrs. P. S. Moore.

Channel.—Both banks are high, not subject to overflow, and the bed is composed of gravel and boulders.

Discharge Measurement of Tionesta Creek at Butler Bridge, Forest County
(Drainage area, 420 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
6	July 18	Wilson & Weaver	375	3.60	152	0.6 method

Daily Mean Gage Heights, in feet, of Tionesta Creek at Butler Bridge, Forest County, for the year ending September 30, 1916.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	**	3.8	4.8	4.7	5.9	6.7	8.6	5.2	4.6	4.0	3.3	3.2
2	-------	3.8	4.7	7.0	5.5	6.6	8.6	5.0	4.4	4.0	3.3	3.3
3	-------	3.7	4.6	7.1	5.4	6.5	7.5	4.8	9.2	4.1	3.2	3.2
4	4.2	3.7	4.4	6.1	5.1	6.2	6.9	5.3	7.4	3.9	3.2	3.2
5	5.5	3.7	4.4	5.8	5.0	6.0	6.2	5.0	6.1	3.8	3.3	3.5
6	5.3	3.7	4.3	8.0	4.9	6.1	5.9	4.8	5.6	3.7	3.3	3.6
7	4.8	3.7	4.2	7.0	4.7	6.3	5.6	4.8	5.4	3.7	3.3	3.5
8	4.5	3.6	4.2	6.0	*7.7	8.3	5.6	4.7	5.3	3.7	3.4	3.7
9	4.3	3.6	4.2	5.6	8.2	7.9	5.6	4.6	5.4	3.7	3.3	3.8
10	4.4	3.6	4.1	5.5	8.0	7.4	5.0	4.5	6.7	3.6	3.3	3.5
11	4.3	3.6	*4.5	5.4	7.7	6.7	5.0	4.4	7.4	3.6	3.5	3.4
12	4.1	3.6	5.6	5.3	7.8	6.7	5.0	4.3	6.4	3.6	3.7	3.4
13	4.0	3.8	7.5	5.5	7.8	7.1	5.2	4.2	6.0	3.5	3.5	3.3
14	4.0	3.7	7.5	5.9	7.8	7.3	8.1	4.2	5.4	3.9	3.4	3.3
15	4.2	3.8	7.5	5.2	7.3	7.0	7.1	4.2	6.4	3.7	3.3	3.3
16	4.3	4.4	7.5	5.5	7.1	6.8	6.4	4.6	6.9	3.6	3.3	3.3
17	4.1	4.1	7.5	*5.3	7.1	6.8	6.4	7.1	6.2	3.6	3.3	3.3
18	4.1	4.1	7.2	7.6	7.1	6.7	6.4	6.5	5.7	3.6	3.3	3.3
19	4.5	4.2	6.2	7.5	6.7	6.7	6.4	5.6	6.0	3.5	3.3	3.2
20	4.5	5.7	5.5	7.7	6.7	6.7	6.4	5.1	5.7	3.5	3.2	3.2
21	4.2	5.4	5.2	10.2	6.5	6.6	6.4	4.9	5.4	3.5	3.2	3.2
22	4.2	5.3	5.3	12.6	6.6	6.5	8.2	5.0	5.3	3.6	3.2	3.3
23	4.1	5.1	4.9	12.8	6.7	6.5	7.3	5.9	5.2	3.6	3.2	3.4
24	4.0	4.9	4.9	11.0	7.0	6.5	6.6	5.5	4.7	3.5	3.2	3.5
25	4.0	4.7	4.9	8.1	7.0	6.5	6.2	5.2	4.7	3.4	3.2	3.3
26	4.0	4.8	5.9	5.3	7.0	8.2	6.1	5.0	4.5	3.4	3.2	3.3
27	3.9	5.0	5.4	5.1	7.0	12.1	6.0	4.8	4.4	3.4	3.2	3.2
28	3.9	5.2	5.3	5.2	6.6	9.8	6.0	4.9	4.3	3.4	3.3	3.5
29	3.9	5.1	5.2	5.1	6.7	9.8	5.7	4.8	4.1	3.3	3.2	3.3
30	3.8	5.0	5.0	5.1	-------	8.9	5.5	5.1	4.1	3.3	3.2	3.3
31	3.8	-------	4.9	5.4	-------	8.6	-------	4.7	-------	3.3	3.2	-------

NOTES—*Creek frozen December 11 to 17, 1915, January 17 to 23, and February 8 to March 27, 1916, inclusive. **Chain and weight stolen.

OHIO BASIN--STATION NO. 6

OIL CREEK AT ROUSEVILLE

DESCRIPTION OF STATION

Location.—At two span, steel, through truss, highway bridge, one-half mile below Rouseville, Venango County, and 2½ miles above the mouth.

Records Available.—Discharge complete from October 20, 1909, to September 30, 1916.

Drainage Area.—330 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the downstream side of the bridge and is read once daily by C. H. Wright.

Channel.—Right bank overflows in extreme floods, left bank is high and does not overflow, and the bed is composed of gravel.

Discharge Measurement of Oil Creek at Rouseville, Venango County
(Drainage area, 330 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec. ft.	
26	July 13	Wilson & Weaver	80	0.96	109	Wading 300 feet above bridge

Daily Mean Gage Heights, in feet, of Oil Creek at Rouseville, Venango County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	1.2	1.0	2.0	1.9	2.7	-------	3.6	2.0	1.6	1.3	0.7	0.7
2	1.7	††1.1	1.7	4.5	2.1	-------	3.4	1.8	1.4	1.2	0.6	0.7
3	1.4	1.1	1.7	4.0	2.0	-------	2.7	1.8	2.2	1.2	0.6	0.7
4	1.3	1.2	1.6	2.6	1.7	-------	2.4	2.8	1.9	1.2	0.5	0.7
5	2.0	1.2	1.6	3.1	1.7	-------	2.4	2.0	1.6	1.1	0.7	1.5
6	1.7	1.0	1.5	4.6	1.7	-------	2.1	1.8	1.5	1.0	1.1	1.1
7	1.5	1.0	1.5	3.0	1.6	-------	1.9	1.8	1.5	1.0	0.9	1.0
8	1.4	1.1	1.5	2.2	1.5	-------	1.9	1.8	1.6	0.9	0.9	1.1
9	1.4	1.0	1.5	2.0	1.5	-------	1.9	1.6	1.6	1.0	1.0	1.1
10	2.5	0.9	1.4	2.1	1.5	-------	1.8	1.6	1.8	1.0	0.9	1.0
11	2.0	1.0	1.3	2.1	1.5	-------	1.8	1.5	2.3	1.0	0.9	0.9
12	1.7	1.1	1.3	2.0	1.4	-------	1.8	1.4	1.8	0.9	0.8	0.7
13	1.5	1.1	1.4	3.2	1.4	-------	1.8	1.4	1.7	0.9	0.8	0.7
14	1.4	1.1	1.4	2.4	*	-------	3.3	1.3	1.7	1.3	0.8	0.7
15	1.7	1.2	1.4	2.0	-------	-------	3.1	1.4	1.7	1.1	0.7	0.7
16	2.0	1.4	1.4	2.1	-------	-------	2.4	1.4	3.1	1.0	0.7	0.8
17	1.7	1.3	1.6	1.9	-------	-------	2.6	1.6	2.5	1.0	0.7	0.8
18	1.5	1.3	4.3	1.7	-------	-------	2.5	1.5	2.5	1.0	0.7	0.7
19	2.1	2.0	3.1	1.6	-------	-------	2.2	1.4	2.7	1.0	0.7	0.7
20	1.7	2.4	2.2	1.7	-------	-------	2.4	1.4	2.5	0.9	0.7	0.6
21	1.5	2.4	2.0	2.1	-------	-------	3.3	1.3	2.1	0.9	0.7	0.7
22	1.4	2.3	1.9	3.1	-------	-------	3.5	1.3	2.1	0.8	0.7	0.7
23	1.3	2.1	1.9	2.7	-------	-------	3.1	2.3	1.7	0.8	1.0	0.7
24	1.3	2.0	1.9	2.1	-------	-------	2.6	1.8	1.6	0.8	0.9	0.7
25	1.3	2.0	2.1	2.0	-------	-------	2.4	1.6	1.5	0.8	0.9	0.7
26	1.2	2.5	3.6	1.9	-------	2.5	2.4	1.4	1.4	0.8	0.8	0.7
27	1.2	2.6	2.6	2.0	-------	4.0	2.3	1.4	1.4	0.8	0.8	0.6
28	1.2	2.9	2.4	2.0	-------	6.6	3.0	2.0	1.3	0.7	0.8	0.7
29	1.2	2.3	2.0	2.0	-------	5.5	2.4	1.9	1.3	0.7	0.8	0.7
30	1.1	2.1	2.0	2.1	-------	4.4	2.1	1.9	1.3	0.7	0.7	0.7
31	1.0	-------	2.0	2.4	-------	4.0	-------	1.7	-------	0.7	0.6	-------

NOTES—*Creek frozen February 14 to March 25, 1916, inclusive. ††Estimated.

Daily Discharge, in Second-feet, of Oil Creek at Rouseville, Venango County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	210	145	780	675	1,830	110	3,370	780	420	255	77	77
2	495	175	495	5,040	900	110	3,020	580	300	210	60	77
3	300	175	495	4,080	780	100	1,830	580	1,030	210	60	77
4	255	210	420	1,660	495	100	1,320	2,000	675	210	45	77
5	780	210	420	2,510	495	100	1,320	780	420	175	77	355
6	495	145	355	5,240	495	100	900	580	355	145	175	175
7	355	145	355	2,340	420	180	675	580	355	145	118	145
8	300	175	355	1,030	355	725	675	580	420	118	118	175
9	300	145	355	780	355	425	675	420	420	145	145	175
10	1,490	118	300	900	355	250	580	420	580	145	118	145
11	780	145	255	900	355	190	580	355	1,170	145	118	118
12	495	175	255	780	300	180	580	300	580	118	96	77
13	355	175	300	2,680	300	210	580	300	495	118	96	77
14	300	175	300	1,320	*145	200	2,850	255	495	255	96	77
15	495	210	300	780	115	180	2,510	300	495	175	77	77
16	780	300	300	900	115	170	1,320	300	2,510	145	77	96
17	495	255	420	675	115	150	1,660	420	1,490	145	77	96
18	355	255	4,640	495	110	100	1,490	355	1,490	145	77	77
19	900	780	2,510	420	95	100	1,030	300	1,830	145	77	77
20	495	1,320	1,030	495	80	110	1,320	300	1,490	118	77	60
21	355	1,320	780	900	70	150	2,850	255	900	118	77	77
22	300	1,170	675	2,510	90	160	3,200	255	900	96	77	77
23	255	900	675	1,830	105	160	2,510	1,170	495	96	145	77
24	255	780	675	900	155	150	1,660	580	420	96	118	77
25	255	780	900	780	175	250	1,320	420	355	96	118	77
26	210	1,490	3,370	675	155	1,490	1,320	300	300	96	96	77
27	210	1,660	1,660	780	135	4,080	1,170	300	300	96	96	60
28	210	2,170	1,320	780	120	10,800	2,340	780	255	77	96	77
29	210	1,170	780	780	120	7,300	1,320	675	255	77	96	77
30	175	900	780	900	-------	4,840	900	675	255	77	77	77
31	145	-------	780	1,320	-------	4,080	-------	495	-------	77	60	-------

NOTES—*Creek frozen February 14 to March 25, 1916, inclusive, and discharge estimated from Sugar Creek at Wyattville and Sandy Creek at Sandy Lake, in conjunction with climatological data. Discharge above 8.840 second-feet is estimated.

Estimated Monthly Discharge of Oil Creek at Rouseville, Venango County

(Drainage area, 330 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	1,490	145	420	1.27	1.46
November	2,170	118	592	1.79	2.00
December	4,640	255	872	2.64	3.04
1916					
January	5,240	420	1,480	4.48	5.16
February	1,830	----------	322	0.98	1.06
March	††10,800	----------	1,200	3.64	4.20
April	3,370	580	1,560	4.73	5.28
May	2,000	255	529	1.60	1.84
June	2,510	255	715	2.17	2.42
July	255	77	98	0.30	0.35
August	175	45	94	0.28	0.32
September	355	60	102	0.31	0.35
The year	††10,800	45	667	2.02	27.48

NOTES—Creek frozen February 14 to March 25, 1916, inclusive, and discharge estimated from Sugar Creek at Wyattville and Sandy Creek at Sandy Lake, in conjunction with climatological data. ††Estimated.

OHIO BASIN—STATION NO. 7

FRENCH CREEK AT KIMMEYTOWN

DESCRIPTION OF STATION

Location.—At single span, steel, through truss, highway bridge at Kimmeytown, Erie County, 5 miles above Leboeuf.

Records Available.—Discharge complete from May 16, 1910, to September 30, 1916. For other records on this creek see French Creek at Carlton.

Drainage Area.—207 square miles. Prior to October 1, 1915, a drainage area of 190 square miles was used in all calculations, but additional topographic sheets and highway maps, not available at the time the original computations were made, have been used in revising the area to 207 square miles. Therefore all previously published run-off at this station should be corrected for the new figure.

Gage.—A standard chain gage, whose elevation of zero is 1,235.7 feet above mean sea level, is located on the downstream side of the bridge and is read twice daily by Mrs. J. L. Carter.

Channel.—Both banks are subject to overflow at extreme stages; the bed is composed of gravel.

Remarks.—Data at this station previous to October 1, 1914, has been published under North Branch French Creek at Kimmeytown.

Discharge Measurement of French Creek at Kimmeytown, Erie County

(Drainage area, 207 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
16	July 17	Wilson & Weaver, ...	51	0.90	61	Wading 100 feet below bridge

Daily Mean Gage Heights, in feet, of French Creek at Kimmeytown, Erie County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	1.4	1.0	2.6	2.3	4.4	-------	5.7	2.1	1.7	1.0	0.7	0.5
2	1.9	1.1	2.6	7.1	3.2	-------	††4.8	1.9	1.4	††1.2	0.6	0.6
3	††2.1	1.0	1.9	6.5	2.3	-------	3.8	2.0	1.6	1.2	0.6	‖0.6
4	1.9	1.1	1.7	4.3	1.8	-------	3.2	2.7	††1.6	0.9	0.7	0.6
5	1.6	1.0	‖2.0	4.3	2.0	-------	2.9	2.4	1.4	1.0	0.6	0.7
6	††1.6	1.1	2.3	7.2	††1.8	-------	2.6	2.1	1.2	0.9	††0.6	0.6
7	1.5	††1.0	2.1	4.2	1.7	-------	2.2	††1.9	1.1	0.8	0.7	0.6
8	1.5	1.1	2.2	3.1	1.6	-------	2.3	1.8	1.5	0.9	0.7	1.0
9	1,5	0.9	2.1	††2.6	1.8	-------	††2.2	1.5	1.3	††1.0	0.7	1.6
10	††2.7	1.0	1.9	2.2	1.9	-------	2.3	1.5	1.4	0.9	0.7	††1.6
11	2.5	0.9	2.0	3.1	1.8	-------	2.2	1.4	††1.9	0.8	0.7	0.9
12	2.1	1.1	††1.7	2.7	1.9	-------	2.3	1.2	2.0	0.8	0.7	0.9
13	1.6	1.0	1.3	4.4	††2.1	-------	2.4	1.3	1.6	0.8	††0.7	0.8
14	1.5	††1.2	1.8	3.4	2.5	-------	7.4	1.2	1.3	1.4	0.6	0.8
15	2.3	1.3	1.5	2.7	2.5	-------	6.6	1.4	1.3	1.4	0.6	0.8
16	2.7	1.5	1.9	††2.3	2.5	-------	††5.0	††1.2	2.6	††1.1	0.6	0.8
17	††2.7	1.4	1.8	1.8	2.4	-------	3.7	1.3	2.0	0.9	0.6	††0.8
18	2.9	1.5	5.6	1.9	2.5	-------	3.8	1.5	††1.7	0.8	0.6	0.7
19	2.7	2.0	††6.0	2.1	2.5	-------	2.9	1.4	1.6	0.8	0.6	0.7
20	2.6	3.0	3.4	2.3	††2.5	-------	3.1	1.5	2.2	0.8	‖0.6	0.6
21	2.3	††3.2	2.9	2.9	*	-------	5.1	††1.3	1.9	0.8	0.6	0.6
22	‖1.9	2.9	2.8	6.4	-------	-------	5.4	1.2	2.0	0.8	0.5	0.6
23	1.5	2.6	2.2	††7.0	-------	-------	††4.8	2.6	1.7	‖0.8	0.6	0.6
24	††1.4	2.7	2.4	3.4	-------	-------	3.6	2.9	1.4	0.8	0.6	††0.6
25	1.4	2.6	3.0	2.6	-------	-------	3.1	2.1	††1.3	0.7	0.6	0.7
26	1.4	4.2	††4.5	2.5	-------	-------	2.1	1.0	1.4	0.7	0.6	0.7
27	1.3	5.4	4.0	2.4	-------	†	1.8	1.4	1.0	0.7	‖0.6	0.6
28	1.4	6.1	3.2	2.6	-------	11.4	3.7	‖1.7	1.1	0.7	0.6	0.6
29	1.2	3.9	2.5	2.4	-------	9.3	2.8	2.0	1.0	0.7	0.6	0.8
30	1.2	3.1	2.3	‖2.7	-------	7.0	††2.4	1.9	1.0	‖0.7	0.6	0.8
31	‖1.1	-------	2.5	3.0	-------	6.6	-------	1.7	-------	0.7	0.5	-------

NOTES—*Creek frozen February 21 to March 27, 1916, inclusive. †Maximum estimated 12.4 feet at 10 p. m. ††Estimated. ‖Interpolated.

Daily Discharge, in Second-feet, of French Creek at Kimmeytown, Erie County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	188	86	616	490	1,600	200	2,540	414	276	86	32	22
2	344	108	616	3,350	910	200	1,850	344	188	132	26	26
3	414	86	344	3,230	490	200	1,240	378	246	132	26	26
4	344	108	276	1,540	310	200	910	662	246	64	32	26
5	246	86	378	1,540	378	200	760	530	188	86	26	32
6	246	108	490	3,960	310	200	616	414	132	64	26	26
7	216	86	414	1,480	276	250	450	344	108	46	32	26
8	216	108	450	860	246	250	490	310	216	64	32	86
9	216	64	414	616	310	250	450	216	160	86	32	246
10	662	86	344	450	344	250	490	216	188	64	32	246
11	572	64	378	860	310	200	450	188	344	46	32	64
12	414	108	276	662	344	200	490	132	378	46	32	64
13	246	86	160	1,600	414	200	530	160	246	46	32	46
14	216	132	310	1,010	572	200	4,180	132	160	188	26	46
15	490	160	216	662	572	200	3,320	188	160	188	26	46
16	662	216	344	490	572	125	1,990	132	616	108	26	46
17	662	188	310	310	530	125	1,180	160	378	64	26	46
18	760	216	2,460	344	572	125	1,240	216	276	46	26	32
19	662	378	2,780	414	572	125	760	188	246	46	26	32
20	616	810	1,010	490	572	125	860	216	450	46	26	26
21	490	910	710	760	*350	75	2,060	160	344	46	26	26
22	344	760	710	3,140	300	75	2,300	132	378	46	22	26
23	216	616	450	3,740	300	75	1,850	616	276	46	26	26
24	188	662	530	1,010	300	75	1,120	760	188	46	26	26
25	188	616	810	616	300	75	860	414	160	32	26	32
26	188	1,490	1,660	572	200	1,100	860	246	188	32	26	32
27	160	2,300	1,360	530	200	†3,000	1,240	188	86	32	26	26
28	188	2,870	910	616	200	8,580	1,180	276	108	32	26	26
29	132	1,300	572	530	200	6,270	710	378	86	32	26	46
30	132	860	490	662	-------	3,740	530	344	86	32	26	46
31	108	-------	572	810	-------	3,320	-------	276	-------	32	22	-------

NOTES—*Creek frozen February 21 to March 27, 1916, inclusive, and discharge estimated from climatological data. †Maximum=9,680 second-feet. Discharges below 26 and above 3,740 second-feet are estimated.

Estimated Monthly Discharge of French Creek at Kimmeytown, Erie County

(Drainage area, 207 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	760	108	346	1.67	1.92
November	2,870	64	522	2.52	2.81
December	2,780	160	689	3.33	3.84
1916					
January	††3,960	310	1,220	5.89	6.79
February	1,600	----------	433	2.09	2.25
March	††9,680	----------	975	4.71	5.43
April	††4,180	450	1,250	6.04	6.74
May	760	132	301	1.45	1.67
June	616	86	237	1.14	1.27
July	188	32	66	0.32	0.37
August	32	††22	27	0.13	0.15
September	246	††22	51	0.25	0.28
The year	††9,680	††22	510	2.46	33.52

NOTES—Creek frozen February 21 to March 27, 1916, inclusive, and discharge estimated from climatological data. ††Estimated.

OHIO BASIN—STATION NO. 8

CUSSEWAGO CREEK ABOVE MEADVILLE

DESCRIPTION OF STATION

Location.—At single span, steel, through truss, highway bridge, 4½ miles above Meadville, Crawford County.

Records Available.—Discharge complete from May 3, 1910, to September 30, 1916.

Drainage Area.—88 square miles.

Gage.—A sectional chain gage, whose elevation of zero is 1,071.77 feet above mean sea level, is located on the downstream side of the bridge and is read twice daily by J. E. Hofius.

Channel.—Both banks are subject to overflow at gage height of approximately 8 feet, and the bed is not permanent.

Discharge Measurement of Cussewago Creek above Meadville, Crawford County

(Drainage area, 88 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
17	1916 July 15	Wilson & Weaver ------ ------	Sq. ft. 21	Feet 1.47	Sec.-ft. 18	0.6 method

Daily Mean Gage Heights, in feet, of Cussewago Creek above Meadville, Crawford County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	1.9	1.7	6.5	7.0	6.6	-------	8.5	3.4	2.7	1.14	0.74	0.54
2	2.8	1.6	4.6	8.3	7.1	-------	7.2	3.0	2.2	1.14	0.64	0.54
3	3.8	1.6	4.4	11.4	4.4	-------	5.8	2.8	2.6	2.5	0.64	0.54
4	3.2	1.6	4.2	9.6	3.4	-------	4.5	4.4	3.3	2.3	0.74	0.54
5	2.8	1.6	4.1	9.1	3.1	-------	3.9	5.0	2.6	1.9	1.04	1.6
6	2.6	1.7	4.1	9.4	2.9	-------	3.5	4.0	2.1	1.6	1.14	0.89
7	2.4	1.7	3.8	9.8	2.3	-------	3.2	3.2	1.9	1.34	0.94	0.79
8	2.1	1.6	3.6	8.0	2.7	-------	3.0	3.2	2.8	1.14	0.74	0.84
9	1.8	1.6	3.7	6.0	2.8	-------	2.9	2.8	3.3	1.7	0.94	1.5
10	3.7	1.5	3.5	4.2	2.8	-------	3.4	2.4	††3.8	2.7	0.89	1.34
11	6.5	1.5	3.6	4.4	2.8	-------	3.9	2.2	4.4	3.6	0.84	1.19
12	6.8	1.5	3.6	4.6	2.9	-------	3.4	2.0	5.5	1.7	0.74	0.94
13	4.0	1.6	3.8	6.7	*	-------	3.3	1.8	4.0	1.24	0.64	0.84
14	2.6	1.8	3.5	7.6	-------	-------	5.3	1.8	2.7	1.8	0.64	0.74
15	3.0	1.8	3.4	8.0	-------	-------	7.1	1.8	2.2	1.5	0.64	0.84
16	††5.3	††2.2	3.5	6.7	-------	-------	7.8	1.6	2.1	1.34	0.64	0.74
17	5.2	2.8	6.6	**	-------	-------	6.4	2.3	2.0	1.14	0.59	0.69
18	3.6	2.7	8.3	-------	-------	-------	6.2	2.6	3.4	1.14	0.59	0.69
19	5.5	3.3	10.2	-------	-------	-------	5.2	2.6	2.8	1.09	0.54	0.64
20	6.3	**	9.6	-------	-------	-------	4.0	2.2	2.7	1.04	0.54	0.64
21	4.6	-------	8.8	-------	-------	-------	5.9	2.2	2.4	0.99	0.54	0.64
22	3.4	-------	7.0	-------	-------	-------	9.2	2.0	2.4	1.04	0.54	0.59
23	2.9	-------	4.6	9.8	-------	-------	9.8	4.6	2.5	1.14	0.59	0.64
24	2.5	-------	††3.8	8.9	-------	-------	9.3	6.6	1.7	0.99	0.59	0.64
25	2.3	-------	5.2	6.2	-------	-------	8.5	4.5	2.1	0.94	0.59	0.64
26	2.2	6.8	7.8	4.3	-------	-------	6.1	2.8	2.1	0.84	0.54	0.64
27	2.0	7.6	8.2	4.0	-------	9.4	5.0	2.2	1.7	0.74	0.74	0.69
28	1.9	8.4	8.9	3.9	-------	13.3	4.9	4.9	1.44	0.74	0.64	0.69
29	1.9	9.2	7.2	3.8	-------	10.4	4.4	7.1	1.34	0.69	0.64	0.74
30	1.8	8.6	6.7	3.6	-------	9.6	4.3	4.8	1.24	0.64	0.64	0.74
31	1.8	-------	6.5	5.1	-------	9.2	-------	3.2	-------	0.59	0.59	-------

NOTES—*Creek frozen January 17 to 22, and February 13 to March 26, 1916, inclusive. **Gage removed on account of repairs to bridge. ††Estimated.

Daily Discharge, in Second-feet, of Cussewago Creek above Meadville, Crawford County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	25	20	313	364	322	60	599	96	57	9	4	2
2	62	18	171	558	375	60	386	72	35	9	3	2
3	120	18	157	1,400	157	60	256	62	52	47	3	2
4	84	18	144	861	96	60	164	157	90	39	4	2
5	62	18	138	732	78	60	126	199	52	25	7	18
6	52	20	138	806	67	60	102	132	31	18	9	6
7	43	20	120	920	39	60	84	84	25	13	6	5
8	31	18	108	501	57	125	72	84	62	9	4	5
9	22	18	114	272	62	125	67	62	90	20	6	16
10	114	16	102	144	62	125	96	43	120	57	6	13
11	313	16	108	157	62	125	126	35	157	108	5	10
12	342	16	108	171	67	125	96	28	234	20	4	6
13	132	18	120	332	*35	80	90	22	132	11	3	5
14	52	22	102	439	35	80	220	22	57	22	3	4
15	72	22	96	501	35	80	375	22	35	16	3	5
16	220	35	102	332	35	80	468	18	31	13	3	4
17	213	62	322	*75	35	80	304	39	29	9	3	4
18	108	57	558	75	35	50	288	52	96	9	3	4
19	234	90	1,040	75	30	50	213	52	62	8	2	3
20	296	††206	861	75	30	50	132	35	57	7	2	3
21	171	††332	663	75	30	50	264	35	43	7	2	3
22	96	††322	364	300	30	50	756	28	43	7	2	3
23	67	††227	171	920	30	50	220	171	47	9	3	3
24	47	††213	120	686	40	50	780	322	20	7	3	3
25	39	††264	213	288	120	50	599	164	31	6	3	3
26	35	342	468	150	120	80	280	62	31	5	2	3
27	28	439	538	132	120	806	199	35	20	4	4	4
28	25	578	686	126	120	2,020	192	192	15	4	3	4
29	25	756	386	120	60	1,100	157	375	13	4	3	4
30	22	620	332	108	-------	861	150	185	11	3	3	4
31	22	-------	313	206	-------	756	-------	84	-------	3	3	-------

NOTES—*Creek frozen January 17 to 22, and February 13 to March 26, 1916, inclusive, and discharge estimated from Brokenstraw Creek at Youngsville and Sandy Creek at Sandy Lake. ††Estimated. Discharges above 1,130 second-feet are estimated.

Estimated Monthly Discharge of Cussewago Creek above Meadville, Crawford County

(Drainage area, 88 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	342	22	102	1.16	1.34
November	756	16	161	1.83	2.04
December	1,040	96	296	3.36	3.87
1916					
January	††1,400		384	4.36	5.03
February	375		82	0.93	1.00
March	††2,020		241	2.74	3.16
April	920	67	285	3.24	3.62
May	375	18	96	1.09	1.26
June	234	11	59	0.67	0.75
July	108	3	17	0.19	0.22
August	9	2	4	0.05	0.06
September	18	2	5	0.06	0.07
The year	††2,020	2	145	1.65	\22.42

NOTES—Creek frozen January 17 to 22, and February 13 to March 26, 1916, inclusive, and discharge estimated from Brokenstraw Creek at Youngsville and Sandy Creek at Sandy Lake.
††Estimated.

OHIO BASIN—STATION NO. 9

FRENCH CREEK AT CARLTON

DESCRIPTION OF STATION

Location.—At two span, steel, through truss, highway bridge at Carlton, Mercer County.

Records Available.—Discharge measurements and gage heights from April 29, 1908, to September 30, 1916. Discharge formerly published at this station is in error due to a revision of drainage area and additional discharge measurements which indicate a change in the discharge curve formerly used. For other records on this creek see French Creek at Kimmeytown in this and the 1915 report, and North Branch French Creek at Kimmeytown in the 1911 to 1914 reports of the Water Supply Commission.

Drainage Area.—1,000 square miles (formerly published as 1,070 square miles).

Gage.—A staff gage, whose elevation of zero is 1,033.60 feet above mean sea level, is fastened to the downstream face of the pier in the right span. On August 7, 1914, a standard chain gage, placed on the same datum as the staff gage, was fastened on the downstream side of the bridge and is read twice daily by E. E. Dean.

Channel.—The right bank is high and not subject to overflow, the left bank is low and overflows during high stages, and the bed is composed of sand, gravel and boulders.

Discharge Measurements of French Creek at Carlton, Mercer County

(Drainage area, 1,000 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
40	May 19	Ferris	330	1.80	586	
41	May 19	Ferris	322	1.76	887	
42	May 23	Ferris	564	2.99	1,866	
43	July 14	Wilson & Weaver	160	1.05	343	0.6 method

Daily Mean Gage Heights, in feet, of French Creek at Carlton, Mercer County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	2.2	1.3	4.6	3.8	5.2	4.0	10.0	3.6	2.4	1.1	0.44	0.34
2	2.3	1.2	3.8	8.1	5.2	*3.8	8.3	3.2	2.0	1.1	0.42	0.32
3	2.7	1.2	3.5	9.0	4.1	3.7	6.9	2.9	2.4	1.2	0.41	0.32
4	2.6	1.2	3.4	9.1	3.1	3.7	5.4	3.6	2.6	1.3	0.40	0.32
5	2.4	1.2	3.3	8.2	2.9	3.5	4.5	3.7	2.3	1.2	0.54	1.1
6	2.3	1.2	3.1	8.5	2.6	3.9	3.9	3.2	1.8	1.1	0.84	0.76
7	2.2	1.2	2.9	8.4	2.4	3.2	3.5	2.9	1.7	1.0	0.97	0.60
8	2.0	1.2	2.8	7.2	1.8	5.0	3.2	2.7	1.7	0.88	0.99	0.90
9	1.8	1.2	2.7	5.0	1.8	5.5	3.1	2.4	2.0	0.95	0.66	1.0
10	2.7	1.1	2.6	4.3	2.0	5.5	3.1	2.2	2.0	2.1	0.56	1.0
11	4.8	1.1	2.5	4.0	2.0	4.9	3.1	2.0	2.4	1.6	0.56	0.96
12	3.7	1.1	2.2	4.2	2.2	4.4	3.0	1.8	3.1	1.1	0.52	0.72
13	3.0	1.2	2.3	4.9	2.2	3.9	2.9	1.7	2.9	1.2	0.49	0.53
14	2.4	1.2	2.2	5.7	*2.7	3.5	4.8	1.6	2.5	1.1	0.47	0.60
15	2.8	1.4	2.2	4.5	3.4	3.2	6.6	1.5	1.9	0.92	0.46	0.59
16	4.1	1.7	2.1	3.9	2.6	3.3	7.1	1.5	2.0	1.1	0.44	0.54
17	3.5	1.9	2.9	3.2	2.2	3.1	5.9	1.6	2.8	0.98	0.42	0.51
18	2.5	1.9	7.1	2.4	2.1	3.0	5.2	1.8	2.7	0.88	0.40	0.49
19	3.8	2.1	7.2	2.5	2.8	2.8	4.7	1.8	3.0	0.79	0.40	0.48
20	4.1	3.1	7.1	2.8	3.1	2.6	4.3	1.7	3.0	0.70	0.39	0.46
21	3.5	4.2	5.4	3.3	3.6	2.6	5.6	1.6	2.8	0.64	0.35	0.44
22	2.9	4.5	4.5	6.2	3.4	2.7	7.6	1.6	2.6	0.60	0.46	0.43
23	2.5	4.3	3.7	7.4	2.8	2.5	7.9	2.1	2.4	0.58	0.48	0.42
24	2.1	4.2	3.2	7.1	2.6	2.6	7.1	3.7	2.1	0.57	0.41	0.40
25	1.9	4.2	4.4	5.0	3.9	2.9	5.8	3.2	1.8	0.54	0.40	0.40
26	1.8	4.8	6.6	4.0	3.7	5.0	4.8	2.5	1.7	0.51	0.39	0.40
27	1.7	5.8	6.5	3.8	4.3	8.7	4.8	2.1	1.5	0.50	0.38	0.40
28	1.6	6.5	6.0	3.7	4.2	12.1	5.5	3.0	1.3	0.46	0.36	0.40
29	1.5	7.1	4.7	3.6	4.0	13.2	5.2	4.2	1.2	0.49	0.34	0.41
30	1.4	6.5	3.7	3.5	-------	13.1	4.2	3.3	1.6	0.46	0.32	0.42
31	1.4	-------	3.4	3.8	-------	11.5	-------	2.7	-------	0.46	0.32	-------

NOTE—*Creek frozen February 14 to 25, and March 2 to 26, 1916, inclusive.

OHIO BASIN—STATION NO. 10

SUGAR CREEK AT WYATTVILLE

DESCRIPTION OF STATION

Location.—At single span, steel pony truss, highway bridge at Wyattville, Venango County, 3 miles abcve the mouth.

Records Available.—Discharge complete from May 6, 1910, to March 31, 1916.

Drainage Area.—160 square miles.

Gage.—A sectional chain gage, whose elevation of zero was 1,050.96 feet above mean sea level, was located on the downstream side of the bridge and was read once daily by T. G. Wyatt.

Channel.—The right bank is high and does not overflow, while the left bank overflows only at extreme stages. The bed is composed of gravel. At low water a pool is formed at the section owing to the flat slope of the creek.

Remarks.—Station discontinued March 31, 1916.

Daily Mean Gage Heights, in feet, of Sugar Creek at Wyattville, Venango County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
1	2.3	1.8	2.5	2.8	2.8	2.0
2	2.3	1.8	2.4	6.0	2.8	2.1
3	2.5	1.8	2.3	4.5	2.5	1.9
4	2.6	1.8	2.2	3.2	2.4	2.0
5	3.1	1.7	2.1	3.0	2.1	1.9
6	3.1	1.8	1.9	2.7	2.2	2.0
7	2.9	1.7	2.0	2.6	2.1	2.0
8	2.8	1.7	2.0	2.6	2.2	2.1
9	2.6	1.7	1.9	2.5	2.1	2.0
10	2.3	1.6	2.0	2.5	2.2	2.2
11	2.2	1.7	2.0	2.5	2.0	2.1
12	2.1	1.7	1.9	2.5	2.1	2.2
13	2.1	1.8	2.0	4.0	2.0	2.2
14	2.0	1.8	2.0	3.3	2.0	2.3
15	2.0	1.8	1.9	2.7	1.9	2.2
16	2.0	1.9	2.0	2.6	1.9	2.2
17	2.0	1.9	2.0	2.4	1.8	2.1
18	2.0	1.9	3.8	2.4	1.9	2.2
19	2.1	1.9	3.4	2.3	1.9	2.2
20	1.9	2.0	2.9	2.3	2.0	2.4
21	2.0	2.9	2.7	2.9	1.9	2.3
22	2.0	2.7	2.8	3.6	2.5	2.5
23	2.0	2.7	2.8	2.9	2.4	2.4
24	2.0	2.7	2.8	2.7	2.4	2.7
25	1.9	2.6	3.8	2.7	2.3	2.8
26	1.9	2.7	3.6	2.7	2.3	3.8
27	1.9	2.7	3.0	2.7	2.2	5.9
28	1.9	2.6	3.0	2.7	2.3	7.6
29	1.9	2.7	3.0	2.8	2.0	5.0
30	1.7	2.6	2.8	2.8	-------	4.8
31	1.8	-------	2.9	2.9	-------	4.0

NOTE—Station discontinued March 31, 1916.

Daily Discharge, in Second-feet, of Sugar Creek at Wyattville, Venango County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
1	177	59	268	432	432	94
2	177	59	220	2,990	432	115
3	268	59	177	1,640	268	75
4	320	59	142	663	220	94
5	619	47	115	555	115	75
6	619	59	75	375	142	94
7	491	47	94	320	115	94
8	432	47	94	320	142	115
9	320	47	75	268	115	94
10	177	37	94	268	142	142
11	142	47	94	268	94	115
12	115	47	75	268	115	142
13	115	59	94	1,240	94	142
14	94	59	94	748	94	177
15	94	59	75	375	75	142
16	94	75	94	320	75	142
17	94	75	94	220	59	115
18	94	75	1,090	220	75	142
19	115	75	813	177	75	142
20	75	94	491	177	94	220
21	94	491	375	491	75	177
22	94	375	432	950	268	268
23	94	375	432	491	220	220
24	94	375	432	375	220	375
25	75	320	1,090	375	177	432
26	75	375	950	375	177	1,090
27	75	375	555	375	142	2,900
28	75	320	555	375	177	4,430
29	75	375	555	432	94	2,090
30	47	320	432	432	-------	1,480
31	59	-------	491	491	-------	1,240

NOTES—Discharge above 2,990 second-feet is estimated. Station discontinued March 31, 1916.

Estimated Monthly Discharge of Sugar Creek at Wyattville, Venango County

(Drainage area, 160 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	619	47	177	1.11	1.28
November	491	37	163	1.02	1.14
December	1,090	75	344	2.15	2.48
1916					
January	2,990	177	549	3.43	3.95
February	432	59	156	0.98	1 06
March	††4,430	75	554	3.46	3.99

NOTES—††Estimated. Station discontinued March 31, 1916.

OHIO BASIN—STATION NO. 11

ALLEGHENY RIVER AT FRANKLIN

DESCRIPTION OF STATION

Location.—At four span, steel, through truss, highway bridge at Eighth Street, Franklin, Venango County.

Records Available.—Discharge measurements and gage heights from June 1, 1915, to September 30, 1916. Gage heights have been observed by the U. S. Weather Bureau from April 1, 1905, to date. For other records on this river see Allegheny River at Larabee, Kittanning and Freeport; also Allegheny River at Red House, N. Y.. in the 1911 to 1914 reports of the Water Supply Commission.

Drainage Area.—6,010 square miles.

Gage.—A staff gage, whose elevation of zero is 958.26 feet above mean sea level, is painted on the east side of the first pier from the east bank and is read twice daily by William C. Rivers.

Channel.—Both banks are high and not subject to overflow, and the bed is composed of gravel and boulders.

Remarks.—This station is maintained in co-operation with the U. S. Engineer Office in Pittsburgh.

Discharge Measurements of Allegheny River at Franklin, Venango County

(Drainage area, 6,010 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1915		Sq. ft.	Feet	Sec.-ft.	
2	Oct. 5	Gough & Bronson,	3,357	2.48	7,286	Surface method
	1916					
3	Mar. 29	Comstock & McConnell	12,795	16.70	101,750	Surface method
4	Mar. 30	Comstock & McConnell	12,665	16.55	101,111	Surface method
5	April 4	Comstock & Chalmers	8,334	10.00	49,463	Surface method
6	April 4	Comstock & Chalmers	8,063	9.60	48,036	Surface method from upstream side of bridge
7	April 5	Comstock	7,331	8.55	38,022	Surface method
8	April 5	Comstock	7,166	8.45	39,776	Surface method from upstream side of bridge
9	July 12	Wilson & Weaver	2,661	1.08	2,656	0.6 method

Daily Mean Gage Heights, in feet, of Allegheny River at Franklin, Venango County, for the year ending September 30, 1916.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	1.8	1.0	4.6	3.9	5.4	1.7	15.0	5.0	3.2	1.6	0.1	—0.4
2	1.8	0.9	3.8	7.2	5.6	1.6	13.6	4.5	2.8	1.4	0.0	—0.4
3	2.1	0.8	3.5	10.1	4.9	1.4	11.8	4.0	5.9	1.2	—0.1	—0.4
4	2.6	0.7	3.2	9.0	4.0	1.3	9.9	4.4	6.8	2.6	—0.1	—0.4
5	2.5	0.7	3.0	8.2	3.5	1.2	8.4	4.6	5.6	2.4	0.2	0.2
6	3.6	0.6	2.8	11.4	3.0	1.1	7.2	4.1	4.8	2.2	0.8	0.4
7	4.0	0.6	2.6	10.2	2.8	2.0	6.3	3.8	4.4	1.8	0.6	0.2
8	3.2	0.6	2.5	8.4	2.6	3.3	5.4	3.4	4.2	1.5	0.4	0.5
9	2.7	0.5	2.6	6.6	2.4	3.8	4.8	3.2	4.1	1.2	0.3	0.9
10	2.9	0.5	2.6	5.8	2.2	3.6	4.6	3.0	4.1	1.4	0.2	1.2
11	3.6	0.5	2.2	5.0	2.0	3.4	4.2	2.8	5.0	1.2	0.0	0.8
12	3.2	0.4	2.0	4.8	1.9	3.0	4.1	2.6	6.1	1.1	0.2	0.5
13	2.6	0.6	1.9	5.5	2.1	2.9	4.6	2.4	5.6	1.0	0.1	0.4
14	2.2	0.6	1.8	6.0	1.8	3.3	7.7	2.2	4.8	1.2	0.0	0.2
15	2.3	1.0	1.6	4.8	1.6	3.0	10.9	2.1	4.4	2.5	0.0	0.0
16	4.0	1.6	1.5	4.3	1.5	2.8	9.8	2.4	6.9	2.2	0.2	—0.1
17	3.8	1.9	2.4	3.6	1.4	2.8	8.9	5.6	6.6	1.9	0.0	—0.2
18	3.0	1.8	7.3	2.8	1.4	*3.4	8.0	7.8	5.8	1.8	—0.1	—0.2
19	3.0	2.2	7.8	2.4	1.3	4.4	6.8	6.6	5.8	1.4	—0.2	—0.2
20	4.5	4.2	6.8	2.2	1.2	5.0	5.8	5.0	6.1	1.0	—0.2	—0.2
21	4.0	4.9	5.7	3.3	1.1	4.4	6.9	4.2	5.8	0.8	—0.3	—0.3
22	3.3	5.1	4.5	5.6	1.1	2.6	8.9	3.6	5.1	0.6	—0.3	—0.3
23	2.8	4.6	4.0	7.2	1.4	2.5	10.1	4.2	4.6	0.5	—0.2	—0.3
24	2.5	4.2	3.8	6.8	2.2	2.2	9.6	5.2	4.0	0.4	—0.3	—0.3
25	2.2	4.0	4.0	5.6	2.5	2.4	8.4	4.7	3.4	0.4	—0.3	—0.3
26	2.0	4.2	7.1	4.8	2.4	4.0	7.6	4.0	3.0	0.4	—0.3	—0.4
27	1.8	4.8	7.0	4.4	2.2	9.4	7.0	3.6	2.6	0.3	—0.4	—0.4
28	1.6	6.2	6.6	4.6	2.0	15.2	7.5	3.6	2.2	0.2	—0.3	—0.4
29	1.4	6.2	5.4	4.6	1.8	16.9	6.8	4.2	2.0	0.2	—0.3	—0.3
30	1.2	5.4	4.4	4.6	-------	16.6	5.9	3.8	1.8	0.1	—0.3	—0.3
31	1.1	-------	3.8	4.6	-------	16.1	-------	3.6	-------	0.1	—0.4	-------

NOTE—*Ice gorge two miles below gage March 18 to 21, 1916, inclusive.

OHIO BASIN—STATION NO. 12

SANDY CREEK AT SANDY LAKE

DESCRIPTION OF STATION

Location.—At single span, iron, through truss, highway bridge at Lake Street, Sandy Lake, Mercer County.

Records Available.—Discharge complete from May 11, 1914, to September 30, 1915, and discharge measurement and gage heights from October 1, 1915, to September 30, 1916.

Drainage Area.—54 square miles.

Gage.—A standard chain gage, whose elevation of zero is 1,150.875 feet above mean sea level, is located on the downstream side of the bridge and is read twice daily by T. S. Bailey.

Channel.—Both banks are low, with small willows bordering the creek channel, and the bed is composed of gravel and stones, with occasional sand bars. There are two islands above the bridge, and one below, the latter becoming submerged at approximately gage height 2.5 feet.

Discharge Measurement of Sandy Creek at Sandy Lake, Mercer County

(Drainage area, 54 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
12	1916 July 13	Wilson & Weaver ----------	Sq. ft. 29	Feet 0.76	Sec.-ft. 20	Wading at bridge

Daily Mean Gage Heights, in feet, of Sandy Creek at Sandy Lake, Mercer County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1 ----------	0.96	0.75	1.4	1.5	1.9	1.4	1.6	1.2	0.65	0.69	0.64	0.50
2 ----------	1.1	0.78	1.2	3.2	1.9	1.1	1.5	0.96	0.60	0.69	0.62	0.51
3 ----------	1.3	0.74	1.1	4.2	1.5	1.2	1.4	1.0	1.2	0.72	0.61	0.52
4 ----------	1.4	0.79	1.0	2.9	1.4	1.1	1.3	1.3	1.4	0.59	0.60	0.48
5 ----------	1.4	0.77	1.0	2.3	1.3	1.1	1.2	1.4	1.3	0.60	0.58	0.46
6 ----------	1.3	0.80	1.1	2.3	0.99	1.1	1.2	1.4	0.97	0.74	0.51	0.62
7 ----------	1.2	0.79	1.0	2.0	1.0	1.3	1.2	1.2	1.0	0.69	0.56	0.60
8 ----------	1.1	0.76	1.0	1.9	1.4	1.9	1.1	1.2	1.2	0.69	0.56	0.73
9 ----------	0.96	0.77	1.1	1.5	1.1	2.3	1.0	1.0	1.3	0.64	0.80	0.81
10 ----------	0.89	0.75	0.98	1.2	0.98	2.4	1.2	0.80	1.2	2.0	0.77	0.74
11 ----------	0.90	0.85	0.94	1.4	1.0	2.0	1.2	0.91	1.4	1.6	0.62	0.67
12 ----------	0.88	0.78	0.94	1.4	1.1	1.8	1.3	0.97	1.4	1.0	0.69	0.53
13 ----------	0.79	0.85	1.1	1.9	1.1	1.4	1.2	0.85	1.2	0.72	0.56	0.50
14 ----------	0.69	0.83	1.0	2.0	1.3	1.6	1.4	0.84	0.82	0.72	0.62	0.50
15 ----------	0.89	0.98	1.1	2.2	1.1	1.5	1.9	0.87	0.86	0.70	0.57	0.50
16 ----------	0.87	1.1	1.2	1.9	0.97	1.8	1.8	0.95	0.93	0.73	0.60	0.50
17 ----------	0.91	1.0	1.3	1.8	0.98	1.6	1.6	1.0	0.93	0.86	0.58	0.50
18 ----------	0.98	1.1	2.5	1.5	1.0	1.7	1.7	0.91	0.85	0.84	0.46	0.49
19 ----------	0.99	1.1	3.4	1.6	1.0	1.4	1.7	0.91	1.0	0.73	0.45	0.47
20 ----------	1.2	1.3	2.8	1.3	0.92	1.5	1.6	0.86	1.1	0.78	0.44	0.43
21 ----------	1.2	1.4	2.1	1.8	1.2	1.1	2.0	0.79	1.3	0.81	0.44	0.46
22 ----------	1.1	1.6	1.8	2.2	1.0	1.2	2.5	0.88	1.1	0.89	0.55	0.48
23 ----------	0.97	1.6	1.4	2.5	1.0	1.4	2.6	1.1	0.89	0.72	0.87	0.50
24 ----------	0.84	1.4	1.3	2.2	1.2	1.7	2.1	1.5	0.80	0.72	0.82	0.50
25 ----------	0.90	1.2	1.5	1.6	1.2	1.8	1.8	1.2	0.88	0.72	0.73	0.50
26 ----------	0.78	1.2	2.2	1.4	1.4	3.1	1.5	0.97	0.92	0.71	0.70	0.48
27 ----------	0.78	1.3	2.6	1.4	1.5	5.3	1.4	0.79	0.85	0.68	0.66	0.48
28 ----------	0.73	1.4	2.3	1.4	1.5	4.6	1.5	0.88	0.75	0.60	0.55	0.49
29 ----------	0.69	1.5	1.8	1.3	1.4	3.4	1.7	0.87	0.67	0.61	0.54	0.51
30 ----------	0.67	1.4	1.6	1.4	-------	2.5	1.5	0.83	0.68	0.61	0.52	0.51
31 ----------	0.77	-------	1.6	1.7	-------	1.9	-------	0.83	-------	0.67	0.50	-------

OHIO BASIN--STATION NO. 13

CLARION RIVER AT CLARION

DESCRIPTION OF STATION

Location.—At single span, steel, through truss, highway bridge about one mile above Clarion, Clarion County.

Records Available.—Discharge complete from November 22, 1909, to September 30, 1915, and discharge measurement and gage heights from October 1, 1915, to September 30, 1916.

Drainage Area.—910 square miles.

Gage.—A Mott gage, whose elevation of zero is 1,052.0 feet above mean sea level, is located on the downstream side of the bridge and is read once daily by J. A. Miller.

Channel.—Both banks are high and not subject to overflow, and the bed is composed of rock, gravel and boulders.

Remarks.—The U. S. Weather Bureau has observed gage heights at this station since November 17, 1884.

Discharge Measurement of Clarion River at Clarion, Clarion County

(Drainage area, 910 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
74	July 11	Wilson & Weaver ----------	602	1.00	585	Surface & 0.6 method

NOTE—Measurements Nos. 27 to 73 inclusive made during 1916 by the American Pipe & Construction Co. have not been published, but may be had upon application to the Water Supply Commission.

Daily Mean Gage Heights, in feet, of Clarion River at Clarion, Clarion County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	1.4	0.7	2.5	3.6	3.6	2.0	9.8	3.2	2.9	1.5	0.2	—0.2
2	1.5	0.6	2.2	4.6	3.2	2.1	8.7	3.0	2.4	1.5	0.3	0.0
3	1.6	0.6	2.1	8.0	4.1	2.0	8.2	2.7	§8.2	1.4	0.2	0.1
4	2.1	0.6	2.0	5.9	3.9	2.1	5.7	3.0	8.6	1.4	0.3	0.2
5	1.9	0.5	1.9	5.5	3.5	2.0	4.5	3.2	7.4	1.2	0.1	0.0
6	4.9	0.5	1.9	7.6	3.1	2.9	4.5	3.0	6.3	1.1	0.9	0.3
7	3.7	0.5	1.7	6.9	2.9	2.8	4.1	2.6	4.4	1.0	1.0	0.2
8	3.2	0.5	1.5	5.6	2.7	4.0	3.7	2.5	4.3	1.0	0.8	0.7
9	2.9	0.5	1.5	4.9	2.3	3.6	3.3	2.3	3.9	0.8	0.6	0.8
10	2.6	0.6	1.3	4.4	2.1	3.7	3.6	2.3	4.7	0.8	0.5	0.8
11	2.4	0.5	1.3	3.7	2.1	3.4	2.9	2.0	7.3	0.6	0.3	0.7
12	2.1	0.5	1.2	3.4	1.9	3.3	3.0	2.0	7.5	0.7	0.4	0.6
13	1.9	0.5	1.0	3.8	2.3	3.5	3.0	1.7	6.2	0.7	0.2	0.3
14	1.6	0.6	0.9	4.4	*2.1	4.4	3.3	1.8	4.9	1.2	0.6	0.2
15	1.5	0.7	0.8	4.1	2.1	4.0	8.4	1.6	3.9	1.0	0.3	0.3
16	1.2	0.8	0.7	3.6	2.1	4.1	6.1	1.9	5.5	1.1	0.4	0.2
17	1.2	1.1	2.5	3.0	2.1	4.0	5.0	†7.4	5.6	0.9	0.1	0.0
18	1.1	1.3	4.0	2.9	2.1	3.9	4.7	5.2	4.7	0.8	0.1	0.1
19	1.3	1.5	3.5	2.6	2.1	3.8	4.0	4.0	4.8	0.6	0.0	—0.1
20	1.5	1.8	4.1	2.5	2.1	3.8	3.7	3.8	6.2	0.6	0.0	0.0
21	1.7	2.1	3.9	5.5	2.1	3.7	3.9	3.0	4.7	0.5	—0.1	—0.2
22	1.4	2.3	3.1	5.2	2.1	3.8	4.8	2.9	4.6	0.5	—0.1	—0.1
23	1.2	2.8	3.3	4.8	2.1	4.3	6.7	3.6	4.1	0.3	—0.2	—0.2
24	1.1	2.8	3.6	4.4	2.1	3.9	5.8	4.8	3.7	1.2	—0.2	—0.1
25	1.1	2.6	2.8	4.2	2.1	3.6	5.0	3.8	3.0	0.8	—0.3	—0.2
26	1.0	2.5	2.8	3.8	2.1	5.7	4.7	3.5	2.8	0.7	—0.2	—0.1
27	0.9	2.3	4.3	3.4	2.1	8.7	4.4	3.1	2.5	0.6	—0.3	—0.3
28	0.9	2.5	4.1	3.1	2.1	†13.5	4.3	2.8	2.3	0.6	0.0	—0.2
29	0.8	2.5	3.7	2.8	2.1	11.6	4.0	3.3	1.9	0.5	0.0	0.0
30	0.8	2.8	3.5	2.8	-------	9.8	3.5	3.4	1.8	0.5	0.0	0.2
31	0.7	-------	3.3	3.1	-------	10.1	-------	3.1	-------	0.4	—0.2	-------

NOTES—*River frozen February 14 to March 5, 1916, inclusive. †Maximum estimated 14.0 feet at noon. ‡Maximum 9.4 feet at noon. §Maximum 10.6 feet at 2 p. m.

OHIO BASIN—STATION NO. 14

RED BANK CREEK AT ST. CHARLES

DESCRIPTION OF STATION

Location.—At single span, through truss bridge at St. Charles. Clarion County.

Records Available.—Discharge complete from October 30, 1909, to September 30, 1916.

Drainage Area.—540 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the upstream side of the bridge and is read twice daily by W. H. Bish.

Channel.—The right bank overflows at extreme stages, the left bank is high and does not overflow, and the bed is composed of large rocks.

Discharge Measurement of Red Bank Creek at St. Charles, Clarion County
(Drainage area, 540 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
17	July 10	Wilson & Weaver	305	1.69	272	0.6 method

Daily Mean Gage Heights, in feet, of Red Bank Creek at St. Charles, Clarion County, for the year ending September 30, 1916.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	2.3	1.42	2.1	3.4	5.2	2.6	5.7	2.8	2.6	2.2	1.12	1.22
2	3.1	1.32	2.1	7.7	4.4	2.6	5.2	2.7	2.4	2.0	1.18	1.22
3	2.8	1.38	2.0	7.2	3.9	2.5	4.6	2.6	2.2	1.8	1.12	1.18
4	2.6	1.38	1.8	6.3	3.4	2.4	4.1	2.6	5.4	1.8	1.18	1.22
5	5.3	1.48	1.7	6.9	3.2	2.5	3.5	3.1	4.8	1.6	1.23	1.15
6	4.4	1.42	1.6	5.8	3.5	2.5	3.2	3.6	4.0	1.5	1.18	3.0
7	3.9	1.38	1.6	4.9	3.3	2.6	3.0	3.0	3.7	1.38	1.18	2.7
8	3.4	1.38	1.5	4.5	3.0	2.8	2.8	2.8	3.4	1.38	1.20	2.3
9	3.2	1.35	1.48	4.2	2.6	3.0	2.9	2.6	3.1	1.7	1.15	1.8
10	2.8	1.38	1.48	3.8	2.4	2.8	2.7	2.4	2.8	1.5	1.07	1.6
11	2.6	1.32	1.5	3.7	2.2	2.7	3.0	2.4	‡5.0	1.6	1.22	1.6
12	2.0	1.28	1.42	3.9	2.0	2.7	3.4	2.3	4.9	1.48	1.18	1.48
13	1.9	1.22	1.42	5.2	1.8	2.7	4.2	2.2	3.6	4.4	1.18	1.38
14	1.8	1.20	1.5	4.4	1.6	3.8	5.2	2.2	4.2	3.7	1.22	1.28
15	1.7	1.7	1.48	4.0	1.7	3.7	4.7	2.0	4.1	3.0	1.17	1.27
16	1.7	1.8	1.42	3.6	2.0	3.4	4.2	2.0	3.8	2.8	1.22	1.22
17	1.7	1.9	2.2	3.3	2.1	3.2	3.5	5.1	3.9	2.7	1.18	1.28
18	1.7	1.9	3.5	3.0	2.2	3.0	3.5	4.3	3.7	2.5	1.18	1.38
19	1.8	2.2	5.7	2.8	2.1	2.6	3.6	3.4	3.7	2.4	1.22	1.42
20	1.7	3.6	4.8	2.8	2.0	2.5	3.6	2.8	4.7	2.1	1.07	1.33
21	1.7	3.4	3.9	3.6	1.9	2.4	3.5	2.6	4.8	2.1	1.08	1.42
22	1.8	3.2	3.6	4.1	2.0	3.1	3.8	2.4	5.0	1.9	1.18	1.38
23	1.7	3.0	3.2	3.8	2.2	4.0	5.2	3.2	4.3	1.8	1.7	1.38
24	1.6	2.8	3.6	3.6	2.1	3.8	4.8	3.6	3.9	1.7	1.48	1.48
25	1.5	2.6	3.9	3.4	2.3	4.8	4.1	3.2	3.7	1.5	1.27	1.37
26	1.48	2.5	5.0	3.2	2.6	8.2	3.9	3.0	3.5	1.5	1.25	1.32
27	1.48	2.4	4.4	3.1	2.5	9.2	3.6	2.9	3.2	1.48	1.18	1.32
28	1.45	2.3	4.3	3.1	2.6	†11.1	3.4	2.6	3.0	1.45	1.22	1.28
29	1.42	2.2	4.2	3.1	2.6	8.8	3.1	2.5	2.6	1.38	1.18	1.22
30	1.38	2.2	3.9	3.4	-------	7.0	2.8	3.0	2.4	1.23	1.13	1.13
31	1.48	-------	3.6	3.8	-------	6.4	-------	2.8	-------	1.20	1.28	-------

NOTES—†Maximum estimated 12.0 feet at 4 a. m. ‡Maximum 6.0 feet at 5 p. m.

Daily Discharge, in Second-feet, of Red Bank Creek at St. Charles, Clarion County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	520	147	420	1,350	4,220	700	5,140	840	700	470	64	86
2	1,070	116	420	8,840	2,780	700	4,220	770	570	375	76	86
3	840	134	375	7,920	1,980	630	3,120	700	470	285	64	76
4	700	134	285	6,250	1,350	570	2,280	700	4,580	285	76	86
5	4,400	168	245	7,360	1,150	630	1,460	1,070	3,480	210	89	70
6	2,780	147	210	5,320	1,460	630	1,150	1,580	2,120	175	76	990
7	1,980	134	210	3,660	1,240	700	990	990	1,710	134	76	770
8	1,350	134	175	2,950	990	840	840	840	1,350	134	80	520
9	1,150	125	168	2,440	700	990	910	700	1,070	245	70	285
10	840	134	168	1,840	570	840	770	570	840	175	54	210
11	700	116	175	1,710	470	770	990	570	‡3,840	210	86	210
12	375	104	147	1,980	375	770	1,350	520	3,660	168	76	168
13	330	86	147	4,220	285	770	2,440	470	1,580	2,780	76	134
14	285	80	175	2,780	210	1,840	4,220	470	2,440	1,710	86	104
15	245	245	168	2,120	245	1,710	3,300	375	2,280	990	74	101
16	245	285	147	1,580	375	1,350	2,440	375	1,840	840	86	86
17	245	330	470	1,240	420	1,150	1,460	4,030	1,980	770	76	104
18	245	330	1,460	990	470	990	1,460	2,610	1,710	630	76	134
19	285	470	5,140	840	420	700	1,580	1,350	1,710	570	86	147
20	245	1,580	3,480	840	375	630	1,580	840	3,300	420	54	119
21	245	1,350	1,980	1,580	330	570	1,460	700	3,480	420	56	147
22	285	1,150	1,580	2,280	375	1,070	1,840	570	3,840	330	76	134
23	245	990	1,150	1,840	470	2,120	4,220	1,150	2,610	285	245	134
24	210	840	1,580	1,580	420	1,840	3,480	1,580	1,980	245	168	168
25	175	700	1,980	1,350	520	3,480	2,280	1,150	1,710	175	101	131
26	168	630	3,840	1,150	700	9,760	1,980	990	1,460	175	95	116
27	168	570	2,780	1,070	630	11,600	1,580	910	1,150	168	76	116
28	158	520	2,610	1,070	700	†15,100	1,350	700	990	158	86	104
29	147	470	2,440	1,070	700	10,900	1,070	630	700	134	76	86
30	134	470	1,980	1,350	-------	7,540	840	990	570	89	66	66
31	168	-------	1,580	1,840	-------	6,440	-------	840	-------	80	104	-------

NOTES—†Maximum=16,700 second-feet. ‡Maximum=5,700 second-feet. Discharges above 9,395 second-feet are estimated.

Estimated Monthly Discharge of Red Bank Creek at St. Charles, Clarion County

(Drainage area, 540 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	4,400	134	675	1.25	1.44
November	1,580	80	423	0.78	0.87
December	5,140	147	1,220	2.26	2.61
1916					
January	8,840	840	2,660	4.93	5.68
February	4,220	210	860	1.59	1.72
March	††16,700	570	2,850	5.28	6.09
April	5,140	770	2,060	3.81	4.25
May	4,030	375	986	1.83	2.11
June	5,700	470	1,990	3.69	4.12
July	2,780	80	446	0.83	0.96
August	245	54	85	0.16	0.18
September	990	66	190	0.35	0.39
The year	††16,700	54	1,210	2.24	30.42

NOTE—††Estimated.

OHIO BASIN—STATION NO. 15

MAHONING CREEK NEAR DAYTON

DESCRIPTION OF STATION

Location.—At single span, through truss, highway bridge, known as Independence Bridge, near Dayton, Armstrong County.

Records Available.—Discharge measurement and gage heights from August 12 to September 30, 1916.

Drainage Area.—322 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the downstream handrail and is read twice daily by J. T. Mathews.

Channel.—Both banks are high and not subject to overflow, and the bed is composed of small boulders and gravel.

Discharge Measurement of Mahoning Creek near Dayton, Armstrong County
(Drainage area, 322 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
1	Aug. 12	Wilson & Brown	485	3.79	1,173	0.6 method

Daily Mean Gage Heights, in feet, of Mahoning Creek near Dayton, Armstrong County, for the year ending September 30, 1916.

Day	Aug.	Sept.
1	-------	1.9
2	-------	2.85
3	-------	2.45
4	-------	2.15
5	-------	2.1
6	-------	2.4
7	-------	2.25
8	-------	2.25
9	-------	2.3
10	-------	2.1
11	-------	2.0
12	3.61	1.95
13	2.5	1.9
14	2.3	1.8
15	2.0	2.5
16	2.0	2.45
17	2.0	2.2
18	1.95	2.1
19	1.85	2.0
20	1.8	1.9
21	1.8	1.95
22	1.8	2.2
23	2.05	2.45
24	2.25	2.25
25	2.0	2.1
26	1.85	2.05
27	1.9	2.0
28	2.4	1.95
29	2.5	2.0
30	2.15	2.15
31	2.0	-------

OHIO BASIN—STATION NO. 16

ALLEGHENY RIVER AT KITTANNING

DESCRIPTION OF STATION

Location.—At five span, steel, through truss, highway bridge at Market Street, Kittanning, Armstrong County.

Records Available.—Discharge complete from August 18, 1904, to September 30, 1916. For other records on this river see Allegheny River at Larabee, Franklin and Freeport; also Allegheny River at Red House, N. Y., in the 1911 to 1914 reports of the Water Supply Commission.

Drainage Area.—9,010 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the upstream side of the bridge and is read twice daily by S. C. Carr.

Channel.—Both banks are high, clean and do not overflow, and the bed is composed of gravel.

Discharge Measurements of Allegheny River at Kittanning, Armstrong County

(Drainage area, 9,010 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
45	Mar. 30	Comstock & McConnell	18,681	21.78	137,080	Surface method
46	July 7	Wilson & Weaver	3,683	4.36	6,272	0.2 & 0.8 method

Daily Mean Gage Heights, in feet, of Allegheny River at Kittanning, Armstrong County, for the year ending September 30, 1916.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	4.0	3.5	7.7	7.4	9.6	5.4	19.9	8.7	6.2	4.6	2.1	1.7
2	4.3	3.4	6.8	10.7	10.2	5.4	18.6	8.0	5.8	4.4	2.0	1.8
3	4.8	3.2	6.2	15.5	9.5	5.2	17.0	7.4	6.5	4.2	2.0	2.0
4	4.9	3.2	5.8	14.3	8.2	5.2	14.7	7.5	13.2	4.0	1.9	1.8
5	6.2	3.2	5.5	13.6	7.5	4.8	12.6	7.8	10.8	5.1	2.6	1.7
6	7.2	3.2	5.4	14.0	7.0	4.8	11.4	7.7	9.0	4.8	2.8	2.0
7	7.5	3.2	5.1	†15.8	6.8	4.6	10.3	7.2	8.2	4.3	3.0	3.4
8	7.0	3.1	5.0	12.8	6.4	7.3	9.4	6.8	7.8	3.8	2.5	2.9
9	6.2	3.0	4.8	10.8	5.7	7.8	8.5	6.4	7.6	3.6	2.4	2.6
10	5.5	3.0	4.8	9.4	5.2	7.6	8.0	6.2	7.8	3.4	2.3	3.0
11	5.6	2.9	4.5	9.3	5.2	7.4	8.0	5.8	8.8	3.6	2.4	3.6
12	6.2	2.9	4.2	8.9	5.5	6.8	7.8	5.6	10.5	3.4	3.5	3.1
13	5.6	2.9	4.1	9.7	5.6	6.5	7.8	5.2	10.2	3.3	3.0	2.7
14	5.0	3.0	4.0	10.5	5.1	7.6	9.1	5.1	9.0	3.4	2.6	2.4
15	4.6	3.2	3.9	9.4	4.0	7.6	15.6	4.8	8.2	4.0	2.4	2.3
16	4.4	3.5	3.8	8.4	3.8	6.1	14.9	4.9	11.2	5.0	2.2	2.3
17	6.3	3.9	3.8	7.7	4.6	6.0	13.4	6.8	11.4	4.6	2.1	2.3
18	5.8	4.2	10.3	6.5	4.8	5.8	12.3	11.2	10.2	4.0	2.1	2.1
19	5.2	4.3	12.7	5.7	4.8	5.4	11.0	11.0	9.6	3.6	2.0	2.0
20	5.6	5.6	11.5	4.5	4.4	5.3	9.8	9.1	10.6	3.2	1.9	1.8
21	6.8	7.8	10.1	4.6	4.1	5.4	9.8	7.6	10.3	3.1	1.8	1.8
22	6.3	8.2	8.5	8.6	4.0	5.6	11.4	7.0	9.8	2.9	1.7	2.0
23	5.5	8.0	7.8	10.8	4.5	7.6	14.7	7.0	8.9	2.9	1.7	1.9
24	5.0	7.5	7.4	11.3	5.1	6.8	14.0	8.3	7.9	3.0	1.7	2.0
25	4.7	7.0	7.2	10.0	5.9	6.9	12.8	8.4	7.2	3.0	2.1	1.8
26	4.4	6.6	9.7	8.8	6.4	10.1	11.8	7.7	6.6	2.8	1.9	1.8
27	4.2	7.0	11.6	8.1	6.4	16.1	11.0	6.8	6.0	2.6	1.8	1.8
28	4.0	7.8	10.8	7.8	5.8	23.1	10.7	6.6	5.6	2.4	1.8	1.7
29	3.8	8.9	10.2	8.0	5.4	23.7	10.6	6.8	5.1	2.4	1.8	1.7
30	3.8	8.7	9.1	8.2	-------	21.8	9.8	7.4	4.8	2.2	1.8	1.7
31	3.6	-------	7.8	8.8	-------	21.2	-------	6.9	-------	2.2	1.8	-------

NOTE—†Maximum 16.4 feet estimated at 2 a. m.

Daily Discharge, in Second-feet, of Allegheny River at Kittanning, Armstrong County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	5,840	4,620	23,300	21,400	35,800	11,000	128,000	29,700	14,800	7,600	1,760	1,220
2	6,660	4,390	17,800	43,600	40,000	11,000	113,000	25,200	12,800	6,960	1,600	1,340
3	8,380	3,940	14,800	82,400	35,100	10,100	96,600	21,400	16,200	6,380	1,600	1,600
4	8,780	3,940	12,800	71,700	29,400	10,100	75,300	22,000	62,400	5,840	1,460	1,340
5	14,800	3,940	11,400	65,700	22,600	8,380	57,600	23,900	44,300	9,640	2,640	1,220
6	20,200	3,940	11,000	69,100	19,000	8,380	48,600	23,300	31,700	8,380	3,060	1,600
7	22,000	3,940	9,640	†85,200	17,800	7,600	40,700	20,200	28,400	6,660	3,490	4,390
8	19,000	3,720	9,200	59,200	15,800	20,800	34,400	17,800	23,900	5,340	2,440	3,270
9	14,800	3,490	8,380	44,300	12,400	23,900	28,400	15,800	22,600	4,850	2,260	2,640
10	11,400	3,490	8,380	34,400	10,100	22,600	25,200	14,800	23,900	4,390	2,080	3,490
11	11,900	3,270	7,260	33,700	10,100	21,400	25,200	12,800	30,400	4,850	2,260	4,850
12	14,800	3,270	6,380	31,000	11,400	17,800	23,900	11,900	42,200	4,390	4,620	3,720
13	11,900	3,270	6,100	36,500	11,900	16,200	23,900	10,100	40,000	4,160	3,490	2,850
14	9,200	3,490	5,840	42,200	9,640	22,600	32,400	9,640	31,700	4,390	2,640	2,260
15	7,600	3,940	5,580	34,400	5,840	22,600	83,300	8,380	26,400	5,840	2,260	2,080
16	6,960	4,620	5,340	27,800	5,340	14,300	77,100	8,780	47,100	9,200	1,920	2,080
17	15,300	5,580	5,340	23,300	7,600	13,800	64,000	17,800	48,600	7,600	1,760	2,080
18	12,800	6,380	40,700	16,200	8,380	12,800	55,300	47,100	40,000	5,840	1,760	1,760
19	10,100	6,660	58,400	12,400	8,380	11,000	45,700	45,700	35,800	4,850	1,600	1,600
20	11,900	11,900	49,300	7,260	6,960	10,500	37,200	32,400	42,900	3,940	1,460	1,340
21	17,800	23,900	39,300	7,600	6,100	11,000	37,200	22,600	40,700	3,720	1,340	1,340
22	15,300	26,400	28,400	29,000	5,840	11,900	48,600	19,000	37,200	3,270	1,220	1,600
23	11,400	25,200	23,900	44,300	7,260	22,600	75,300	19,000	31,000	3,270	1,220	1,460
24	9,200	22,000	21,400	47,900	9,640	17,800	69,100	27,100	24,500	3,490	1,220	1,600
25	7,980	19,000	20,200	38,600	13,300	18,400	59,200	27,800	20,200	3,490	1,760	1,340
26	6,960	16,800	36,500	30,400	15,800	39,300	51,500	23,300	16,800	3,060	1,460	1,340
27	6,380	19,000	50,000	25,800	15,800	87,900	45,700	17,800	13,800	2,640	1,340	1,340
28	5,840	23,900	44,300	23,900	12,800	165,000	43,600	16,800	11,900	2,260	1,340	1,220
29	5,340	31,000	40,000	25,200	11,000	173,000	42,900	17,800	9,640	2,260	1,340	1,220
30	5,340	29,700	32,400	26,400	-------	155,000	37,200	21,400	8,380	1,920	1,340	1,220
31	4,850	-------	23,900	30,400	-------	143,000	-------	18,400	-------	1,920	1,340	-------

NOTE.—†Maximum=90,800 second-feet.

Estimated Monthly Discharge of Allegheny River at Kittanning, Armstrong County

(Drainage area, 9,010 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	22,000	4,850	11,000	1.22	1.41
November	31,000	3,270	11,000	1.22	1.36
December	58,400	5,340	21,800	2.42	2.79
1916					
January	90,800	7,260	37,800	4.20	4.84
February	40,000	5,340	14,400	1.60	1.73
March	173,000	7,600	36,700	4.07	4.69
April	128,000	23,900	54,200	6.02	6.72
May	47,100	8,380	21,000	2.33	2.69
June	62,400	8,380	29,300	3.25	3.63
July	9,640	1,920	4,920	0.55	0.63
August	4,620	1,220	1,970	0.22	0.25
September	4,850	1,220	2,010	0.22	0.24
The year	173,000	1,220	20,500	2.28	30.98

OHIO BASIN—STATION NO. 17

CROOKED CREEK AT HILEMAN'S FARM, ARMSTRONG COUNTY

DESCRIPTION OF STATION

Location.—At single span, steel, through truss, highway bridge, about 3 miles above the mouth, near Ford City, Armstrong County.

Records Available.—Discharge complete from October 16, 1909, to September 30, 1916.

Drainage Area.—279 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the upstream side of the bridge and is read twice daily by J. T. Hileman.

Channel.—Both banks are high and not subject to overflow, and the bed is composed of rock, the section being deep and the current sluggish.

Discharge Measurement of Crooked Creek at Hileman's Farm, Armstrong County

(Drainage area, 279 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
19	1916 July 8	Wilson & Weaver	Sq. ft. 61	Feet 1.41	Sec.-ft. 36	Wading 1,000 feet below bridge

Daily Mean Gage Heights, in feet, of Crooked Creek at Hileman's Farm, Armstrong County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	2.5	1.6	2.0	3.0	2.6	3.0	3.0	2.4	2.2	1.8	1.5	1.9
2	2.5	1.6	2.0	7.0	2.4	2.6	3.0	2.4	1.9	1.9	1.40	1.8
3	2.3	1.6	1.8	6.6	2.8	2.6	3.0	2.3	2.4	1.9	1.30	1.7
4	2.0	1.6	1.9	5.2	2.8	2.4	2.8	2.4	3.3	1.8	1.6	1.7
5	2.6	1.6	1.8	4.6	2.8	2.2	2.6	2.3	2.9	1.6	2.1	1.7
6	2.4	1.45	1.9	4.2	3.2	2.2	2.6	2.2	3.2	1.6	2.4	1.6
7	2.1	1.5	1.8	3.8	3.3	2.4	2.5	2.6	3.4	1.6	2.6	1.5
8	1.8	1.5	1.8	3.6	3.2	5.0	2.4	2.5	3.6	1.34	2.4	1.40
9	1.6	1.45	1.7	4.1	3.1	4.4	2.7	2.4	3.6	1.30	2.2	1.40
10	1.8	1.40	1.8	4.6	3.0	3.1	2.8	2.2	3.8	1.30	2.1	1.30
11	1.8	1.45	1.8	4.6	3.0	2.8	3.2	2.3	3.4	1.20	2.6	1.40
12	1.6	1.45	1.8	4.8	3.2	2.6	3.8	2.2	2.9	1.20	2.5	1.40
13	1.5	1.40	*	4.6	3.0	3.0	4.4	2.2	2.8	1.10	2.6	1.5
14	1.40	1.40	-------	4.4	3.0	3.6	4.8	1.9	2.8	1.5	2.4	2.0
15	1.40	1.8	-------	4.1	2.8	4.8	4.9	2.0	3.0	1.45	2.8	2.2
16	1.45	2.0	-------	*	2.8	4.3	3.0	2.4	3.2	1.6	2.5	2.0
17	1.45	2.3	-------	-------	2.8	3.0	2.9	2.5	3.0	1.6	2.4	1.9
18	1.5	2.7	8.4	-------	3.0	2.6	2.8	2.2	3.3	1.6	2.3	1.8
19	1.8	2.8	6.6	-------	3.0	4.0	2.7	2.1	3.8	1.40	2.2	1.8
20	2.6	2.8	3.8	-------	2.8	3.4	2.4	2.0	4.6	1.25	2.2	1.7
21	2.4	2.8	3.4	-------	2.8	2.4	3.0	2.3	5.0	1.20	2.2	2.5
22	2.2	2.6	3.0	-------	2.8	†7.4	3.2	2.2	4.9	1.45	2.1	2.4
23	1.9	2.4	2.8	4.6	2.8	6.4	2.7	2.1	4.1	1.5	2.0	2.4
24	1.8	2.3	2.6	4.2	2.9	5.7	2.7	2.0	3.0	1.5	1.8	2.3
25	1.8	2.2	2.6	2.8	3.6	5.8	2.6	1.8	2.4	1.40	1.8	2.2
26	1.8	2.0	2.4	2.8	3.6	5.7	2.6	1.8	2.4	1.40	2.0	2.0
27	1.8	1.9	3.0	2.8	3.4	5.7	2.6	1.8	2.3	1.25	2.5	2.0
28	1.8	1.8	2.8	2.8	3.2	6.6	2.5	2.3	2.2	1.20	2.5	2.2
29	1.8	2.0	2.6	2.8	3.0	4.8	2.4	2.2	2.0	1.20	2.4	2.4
30	1.7	1.8	2.8	3.9	-------	4.3	2.2	2.0	1.8	1.20	2.2	2.2
31	1.6	-------	2.8	4.6	-------	4.0	-------	1.9	-------	1.40	2.1	-------

NOTES—*Creek frozen December 13 to 17, 1915, and January 16 to 22, 1916, inclusive. †Maximum estimated 10.0 feet at 8 p. m.

Daily Discharge, in Second-feet, of Crooked Creek at Hileman's Farm, Armstrong County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	318	61	145	555	359	555	555	278	205	97	48	120
2	318	61	145	5,070	278	359	555	278	120	120	36	97
3	240	61	97	4,480	451	359	555	240	278	120	26	77
4	145	61	120	2,750	451	278	451	278	770	97	61	77
5	359	61	97	2,070	451	205	359	240	500	61	174	77
6	278	42	120	1,630	690	205	359	205	690	61	278	61
7	174	48	97	1,220	770	278	318	359	850	61	359	48
8	97	48	97	1,030	690	2,530	278	318	1,030	30	278	36
9	61	42	77	1,520	620	1,850	403	278	1,030	26	205	36
10	97	36	97	2,070	555	620	451	205	1,220	26	174	26
11	97	42	97	2,070	555	451	690	240	850	18	359	36
12	61	42	97	2,300	690	359	1,220	205	500	18	318	36
13	48	36	*70	2,070	555	555	1,850	205	451	11	359	48
14	36	36	70	1,850	555	1,030	2,300	120	451	48	278	145
15	36	97	70	1,520	451	2,300	2,420	145	555	42	451	205
16	42	145	70	*1,000	451	1,740	555	278	690	61	318	145
17	42	240	120	800	451	555	500	318	555	61	278	120
18	48	403	7,700	600	555	359	451	205	770	61	240	97
19	97	451	4,480	550	555	1,420	403	174	1,220	36	205	97
20	359	451	1,220	550	451	850	278	145	2,070	22	205	77
21	278	451	850	700	451	278	555	240	2,530	18	205	318
22	205	359	555	1,500	451	†5,730	690	205	2,420	42	174	278
23	120	278	451	2,070	451	4,200	403	174	1,520	48	145	278
24	97	240	359	1,630	500	3,320	403	145	555	48	97	240
25	97	205	359	451	1,030	3,440	359	97	278	36	97	205
26	97	145	278	451	1,030	3,320	359	97	278	36	145	145
27	97	120	555	451	850	3,320	359	97	240	22	318	145
28	97	97	451	451	690	4,480	318	240	205	18	318	205
29	97	145	359	451	555	2,300	278	205	145	18	278	278
30	77	97	451	1,320	-------	1,740	205	145	97	18	205	205
31	61	-------	451	2,070	-------	1,420	-------	120	-------	36	174	-------

NOTES—*Creek frozen December 13 to 17, 1915, and January 16 to 22, 1916, inclusive, and discharge estimated from climatological records, Slippery Rock Creek at Wurtemburg and Blacklick Creek at Blacklick. †Maximum=10,900 second-feet.

Estimated Monthly Discharge of Crooked Creek at Hileman's Farm, Armstrong County
(Drainage area, 279 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	359	36	138	0.49	0.56
November	451	36	153	0.55	0.61
December	7,700		652	2.34	2.70
1916					
January	5,070	451	1,520	5.45	6.28
February	1,030	278	641	2.30	2.48
March	10,900	205	1,630	5.84	6.73
April	2,420	205	629	2.25	2.51
May	359	97	209	0.75	0.86
June	2,530	97	769	2.76	3.08
July	120	11	46	0.16	0.18
August	451	26	220	0.79	0.91
September	318	26	132	0.49	0.52
The year	10,900	11	563	2.02	27.42

NOTE—Creek frozen December 13 to 17, 1915, and January 16 to 22, 1916, inclusive, and discharge estimated from climatological records, Slippery Rock Creek at Wurtemburg and Blacklick Creek at Blacklick.

OHIO BASIN—STATION NO. 18

STONY CREEK AT JOHNSTOWN

DESCRIPTION OF STATION

Location.—At single span, steel, through truss, highway bridge at Poplar Street, Johnstown.

Records Available.—Discharge complete from January 1, 1914, to September 30, 1916.

Drainage Area.—465 square miles.

Gage.—A vertical chain gage, whose elevation of zero is 1,154.0 feet above mean sea level, is located on the downstream side of the bridge and is read twice daily by L. C. Reitz.

Channel.—Both banks are high and not subject to overflow, and the bed is stony.

Discharge Measurements of Stony Creek at Johnstown, Cambria County

(Drainage area, 465 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1915		Sq. ft.	Feet	Sec.-ft.	
33	Oct. 4	Wilson & Shade	186	1.78	518	0.6 method
	1916					
34	June 20	Wilson & Weaver	582	3.74	1,346	0.6 method

Daily Mean Gage Heights, in feet, of Stony Creek at Johnstown, Cambria County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	2.2	1.15	1.45	3.4	4.6	2.9	5.2	2.7	1.6	2.2	2.4	1.6
2	2.8	1.15	1.58	†8.7	4.2	2.9	4.6	2.5	1.6	2.0	1.6	1.45
3	2.2	1.10	1.38	5.8	3.6	2.7	4.0	2.4	3.0	2.1	1.28	1.38
4	1.8	1.10	1.36	4.3	3.2	2.6	3.9	3.4	3.0	1.9	2.6	1.30
5	1.6	1.10	1.39	3.8	3.0	2.5	3.7	2.2	1.9	1.8	2.4	1.25
6	1.48	1.18	1.38	4.0	2.9	2.6	3.4	2.1	1.8	1.6	3.0	1.25
7	1.42	1.22	1.32	3.4	4.2	3.0	3.0	2.1	1.8	1.5	2.2	1.48
8	1.32	1.28	1.35	2.8	3.1	4.3	3.0	2.2	2.1	1.6	2.0	1.8
9	1.28	1.20	1.39	2.6	3.1	3.4	3.0	2.3	2.8	1.6	2.4	1.7
10	1.20	1.15	1.32	2.8	2.8	2.9	2.8	2.1	2.6	1.6	2.1	1.5
11	1.18	1.10	1.32	3.8	2.6	2.0	3.5	2.0	2.6	1.38	2.4	1.35
12	1.20	1.20	1.36	5.7	3.2	2.7	5.0	1.8	2.5	1.38	3.8	1.28
13	1.25	1.18	1.34	5.5	‡5.9	2.6	4.4	1.8	2.4	1.40	2.6	1.25
14	1.15	1.12	1.22	4.6	4.9	3.8	¶5.4	1.7	2.3	1.35	2.2	1.32
15	1.12	1.32	1.5	3.8	4.3	5.6	5.6	1.7	2.2	1.45	2.0	2.1
16	1.18	1.6	1.6	3.4	3.7	3.6	4.5	‡‡5.5	5.7	1.32	2.0	2.0
17	1.7	1.7	4.8	3.0	3.4	3.8	3.8	4.3	6.3	1.46	2.1	1.7
18	2.3	1.45	8.7	2.6	3.2	3.4	3.4	3.3	5.9	1.42	2.0	1.40
19	4.2	2.4	6.8	2.3	3.0	3.2	3.0	2.6	4.3	1.40	1.6	1.32
20	3.2	3.0	4.1	2.2	2.8	3.0	2.8	2.4	4.1	1.34	1.48	1.28
21	2.6	2.5	3.5	3.8	2.6	3.1	2.6	2.3	4.1	1.25	1.38	1.22
22	2.2	2.4	3.0	4.2	2.4	6.8	3.7	2.1	3.8	1.6	1.30	1.26
23	1.9	2.1	2.7	4.4	3.6	7.8	3.3	2.2	3.4	1.5	3.4	1.28
24	1.8	2.0	2.5	3.6	3.7	5.7	3.0	2.2	3.0	1.28	2.4	1.25
25	1.7	1.9	2.6	3.4	3.8	6.0	3.9	2.1	5.4	1.35	1.8	1.18
26	1.6	1.8	3.2	3.2	3.4	6.8	4.1	2.0	4.2	2.0	2.1	1.13
27	1.40	1.8	3.0	2.8	3.3	8.4	3.9	1.8	3.6	1.7	2.1	1.12
28	1.42	1.6	3.5	2.6	3.0	§10.5	3.6	1.8	3.0	1.40	2.8	1.10
29	1.32	1.7	4.8	2.5	3.0	7.6	3.2	1.7	2.6	1.25	2.2	2.2
30	1.28	1.6	4.4	3.8	-------	6.9	3.0	1.7	2.3	1.28	1.8	2.4
31	1.18	-------	3.6	4.2	-------	5.8	-------	1.7	-------	1.20	1.7	-------

NOTES—†Maximum 9.3 feet from hydrograph at 11 a. m. ‡Maximum 6.8 feet from hydrograph at 6 p. m. §Maximum 11.3 feet at 7 a. m. ¶Maximum 7.0 feet from hydrograph at 8 p. m. ‡‡Maximum 6.0 feet from hydrograph at noon.

Daily Discharge, in Second-feet, of Stony Creek at Johnstown, Cambria County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	480	82	168	1,160	2,160	840	2,730	725	220	480	575	220
2	780	82	138	†7,180	1,800	840	2,160	625	220	390	220	168
3	480	70	144	3,330	1,310	725	1,630	575	900	435	115	144
4	300	70	138	1,890	1,030	675	1,550	1,160	900	345	675	120
5	220	70	147	1,470	900	625	1,390	480	345	300	575	108
6	178	90	144	1,630	840	675	1,160	435	300	220	900	108
7	157	100	126	1,160	1,800	900	900	435	300	185	480	178
8	126	115	135	780	965	1,890	900	480	435	220	390	300
9	115	95	147	675	965	1,160	960	525	780	220	575	260
10	95	82	126	780	780	840	780	435	675	220	435	185
11	90	70	126	1,470	675	675	1,240	390	675	144	575	135
12	95	95	138	3,230	1,030	725	2,530	300	625	144	1,470	115
13	108	90	132	3,030	‡3,440	675	1,980	300	575	150	675	108
14	82	75	100	2,160	2,430	1,470	¶2,930	260	525	135	480	126
15	75	126	185	1,470	1,880	3,130	3,130	260	480	168	390	435
16	90	220	220	1,160	1,390	1,310	2,070	‡‡3,030	3,230	126	390	390
17	260	260	2,340	900	1,130	1,470	1,470	1,890	3,860	171	435	260
18	525	168	7,180	675	1,030	1,160	1,160	1,100	3,440	157	390	150
19	1,800	575	4,430	525	900	1,030	900	675	1,890	150	220	126
20	1,030	900	1,710	480	780	900	780	575	1,710	132	178	115
21	675	625	1,240	1,270	675	965	675	525	1,710	108	144	100
22	480	575	900	1,800	575	4,430	1,390	435	1,470	220	120	110
23	345	435	725	1,980	1,310	5,770	1,100	480	1,160	185	1,160	115
24	300	390	625	1,310	1,390	3,230	900	480	900	115	575	108
25	260	345	675	1,160	1,470	3,540	1,550	435	2,930	135	300	90
26	220	300	1,030	1,030	1,160	4,430	1,710	390	1,800	390	435	75
27	150	300	900	780	1,100	6,770	1,550	300	1,310	260	435	75
28	157	220	1,240	675	900	§10,200	1,310	300	900	150	780	70
29	120	260	2,340	625	900	5,470	1,030	260	675	108	480	480
30	115	220	1,980	1,470	-------	4,550	900	260	525	115	300	575
31	90	-------	1,310	1,800	-------	3,230	-------	260	-------	95	260	-------

NOTES—†Maximum=8,170 second-feet. ‡Maximum=4,430 second-feet. §Maximum=11,700 second-feet. ¶Maximum=4,670 second-feet. ‡‡Maximum=3,540 second-feet. Discharges above 9,360 second-feet are estimated.

Estimated Monthly Discharge of Stony Creek at Johnstown, Cambria County

(Drainage area, 465 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	1,800	75	323	0.69	0.80
November	900	70	237	0.51	0.57
December	7,180	100	998	2.14	2.47
1916					
January	8,170	480	1,590	3.42	3.94
February	4,430	575	1,270	2.73	2.94
March	††11,700	625	2,400	5.16	5.95
April	4,670	675	1,480	3.18	3.55
May	3,540	260	606	1.30	1.50
June	3,360	220	1,180	2.54	2.83
July	460	95	206	0.44	0.51
August	1,470	120	488	1.05	1.21
September	575	70	185	0.40	0.45
The year	††11,700	70	913	1.96	26.72

NOTE—††Estimated.

OHIO BASIN—STATION NO. 19

BLACKLICK CREEK AT BLACKLICK

DESCRIPTION OF STATION

Location.—At three span, steel, through truss, highway bridge, ¼ mile from railroad station at Blacklick, Indiana County.

Records Available.—Discharge complete from August 16, 1904, to December 31, 1905, and from January 8, 1907, to September 30, 1916.

Drainage Area.—386 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the upstream side of the bridge and is read twice daily by Miss Carrie Kelly.

Channel.—The right bank is not subject to overflow, while the left bank overflows at gage height 11.5 feet, and the bed is composed of gravel, sand and boulders.

Discharge Measurement of Blacklick Creek at Blacklick, Indiana County
(Drainage area, 386 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
32	June 20	Wilson & Weaver	1,076	5.76	3,152	0.6 method

Daily Mean Gage Heights, in feet, of Blacklick Creek at Blacklick, Indiana County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	2.38	2.8	2.7	4.7	6.2	3.6	4.6	3.3	2.9	2.9	2.41	2.39
2	3.1	2.7	3.0	8.6	5.2	3.6	5.2	3.3	2.8	2.7	2.34	2.9
3	2.9	2.6	2.8	6.4	4.7	3.4	4.5	3.0	7.3	3.0	2.31	2.6
4	2.7	2.5	2.8	5.1	4.1	3.2	4.2	3.6	5.1	2.8	3.7	2.47
5	3.3	2.5	2.8	4.7	4.0	3.3	4.0	3.3	4.3	2.6	2.9	2.39
6	3.4	2.6	2.7	5.2	3.8	2.9	3.8	3.2	3.8	2.5	3.3	2.34
7	2.9	2.5	2.7	4.8	4.5	4.3	3.6	3.2	3.7	2.44	2.6	2.39
8	2.8	2.48	2.6	3.8	3.7	††5.6	3.5	3.4	3.9	2.29	2.44	2.29
9	2.7	2.40	2.7	3.5	3.9	††4.3	3.6	3.3	3.7	2.39	2.6	2.6
10	2.6	2.48	2.6	3.8	3.8	4.0	3.5	3.1	4.3	3.1	2.6	2.44
11	2.5	2.38	2.5	4.7	3.6	3.7	3.8	3.1	4.2	2.6	2.5	2.34
12	2.43	2.48	2.48	5.3	3.8	3.4	3.9	3.0	3.9	2.49	4.1	2.29
13	2.48	2.43	2.6	6.0	4.6	3.6	3.8	2.9	3.5	2.47	3.0	2.24
14	2.33	2.5	2.5	5.1	3.7	4.7	‡5.7	2.7	3.3	3.8	2.7	2.24
15	2.40	3.0	2.6	4.3	3.8	4.7	5.7	2.9	3.7	3.0	2.5	3.1
16	2.33	3.2	2.7	4.3	3.9	4.1	4.8	3.6	4.9	2.7	2.5	2.9
17	2.33	2.6	4.0	3.5	3.8	3.9	4.5	4.5	5.6	2.7	2.7	2.6
18	2.33	2.8	9.8	3.5	3.7	3.4	4.0	3.9	4.6	2.6	2.49	2.39
19	†9.9	3.3	6.3	3.6	3.4	3.6	3.6	3.5	5.3	2.44	2.47	2.44
20	6.0	4.1	5.1	3.5	3.5	3.4	3.6	3.3	5.5	2.44	2.39	2.34
21	4.7	3.9	4.4	4.7	3.3	3.4	3.5	3.1	4.8	2.44	2.34	2.49
22	4.1	3.9	3.9	5.5	3.3	6.9	4.6	3.1	4.7	5.1	2.29	2.49
23	3.7	3.7	3.9	5.3	4.1	6.4	4.2	3.4	4.1	3.5	3.3	2.5
24	3.4	3.5	3.8	4.6	4.5	5.4	4.0	3.3	3.8	3.0	2.6	2.44
25	3.3	3.4	3.8	4.3	5.1	5.7	4.0	3.1	4.2	3.0	2.49	2.34
26	3.2	3.3	5.1	4.1	4.6	7.3	4.2	3.0	3.6	2.8	2.5	2.39
27	3.1	3.1	4.5	4.0	4.1	7.6	4.0	2.9	3.4	2.7	2.39	2.29
28	2.9	3.1	5.3	3.9	3.8	8.2	3.9	2.9	3.2	2.5	2.6	2.19
29	2.9	3.1	6.3	3.7	3.8	6.2	3.7	2.9	3.1	2.44	2.8	2.44
30	2.8	2.9	5.6	4.9	-------	5.4	3.6	3.1	2.9	2.37	2.5	2.6
31	2.7	-------	4.9	5.2	-------	4.9	-------	3.3	-------	2.29	2.39	-------

NOTES—†Maximum estimated 10.7 feet at 11 a. m. ‡Maximum 7.2 feet at 6 p. m. ††Estimated.

Daily Discharge, in Second-feet, of Blacklick Creek at Blacklick, Indiana County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	72	232	192	1,620	3,880	660	1,520	470	274	274	93	87
2	365	192	318	8,880	2,230	660	2,230	470	232	192	74	274
3	274	153	232	4,260	1,620	525	1,420	318	6,110	318	67	153
4	192	120	232	2,090	1,050	415	1,140	660	2,090	232	730	111
5	470	120	232	1,620	965	470	965	470	1,230	153	274	87
6	525	153	192	2,230	805	274	805	415	895	120	470	74
7	274	120	192	1,230	1,420	1,230	660	415	730	102	153	87
8	232	114	153	895	730	2,840	590	525	885	62	102	62
9	192	90	192	590	885	1,230	660	470	730	87	153	153
10	153	114	153	805	805	965	590	365	1,230	365	153	102
11	120	85	120	1,620	660	730	805	365	1,140	153	120	74
12	99	114	114	2,380	805	525	885	318	885	117	1,050	62
13	114	99	153	3,510	1,520	660	805	274	590	111	318	52
14	72	120	120	2,090	730	1,620	‡3,000	192	470	805	192	52
15	90	318	153	1,230	805	1,620	3,000	274	730	318	120	365
16	72	415	192	1,230	885	1,050	1,730	660	1,840	192	120	274
17	72	274	965	590	805	885	1,420	1,520	2,840	192	192	153
18	72	232	11,700	590	730	525	965	885	1,520	153	117	87
19	†12,000	470	4,060	660	525	660	660	590	2,380	102	111	102
20	3,510	1,050	2,090	590	590	525	680	470	2,680	102	87	74
21	1,620	885	1,320	1,620	470	525	590	365	1,730	102	74	117
22	1,050	885	885	2,680	470	5,270	1,520	365	1,620	2,090	62	117
23	730	730	885	2,380	1,050	4,260	1,140	525	1,050	590	470	120
24	525	590	805	1,520	1,490	2,520	935	470	805	318	153	102
25	470	525	805	1,230	2,090	3,000	885	365	1,140	318	117	74
26	415	470	2,090	1,050	1,520	6,110	1,140	318	660	232	120	87
27	365	365	1,420	965	1,050	6,740	965	274	525	192	87	62
28	274	365	2,380	885	805	8,000	985	274	415	120	153	42
29	274	365	4,060	730	805	3,880	730	274	565	102	232	102
30	232	274	2,840	1,840	-------	2,520	660	365	274	82	120	153
31	192	-------	1,840	2,230	-------	1,840	-------	470	-------	62	87	-------

NOTES—†Maximum=14,100 second-feet. ‡Maximum=5,900 second-feet.

Estimated Monthly Discharge of Blacklick Creek at Blacklick, Indiana County

(Drainage area, 386 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	14,100	72	810	2.10	2.42
November	1,050	85	335	0.87	0.97
December	11,700	114	1,330	3.45	3.98
1916					
January	8,880	590	1,800	4.66	5.37
February	3,880	470	1,110	2.88	3.11
March	8,000	274	2,020	5.23	6.03
April	5,900	590	1,140	2.95	3.29
May	1,520	192	458	1.19	1.37
June	3,110	232	1,270	3.29	3.67
July	2,090	62	270	0.70	0.81
August	1,050	62	206	0.53	0.61
September	365	42	115	0.30	0.34
The year	14,100	42	905	2.34	31.97

OHIO BASIN—STATION NO. 20

KISKIMINITAS RIVER AT AVONMORE

DESCRIPTION OF STATION

Location.—At four span, steel, through truss, highway bridge at P. R. R. Station, Avonmore, Westmoreland County.

Records Available.—Discharge complete from May 29, 1907, to September 30, 1916.

Drainage Area.—1,720 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the downstream side of the bridge and is read twice daily by J. H. Shoup.

Channel.—The right bank is high, the left bank is low and liable to overflow, and the bed is composed of gravel.

Discharge Measurement of Kiskiminitas River at Avonmore, Westmoreland County

(Drainage area 1,720 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
32	July 6	Wilson & Weaver	743	3.54	987	0.6 method

Daily Mean Gage Heights, in feet, of Kiskiminitas River at Avonmore, Westmoreland County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	2.75	3.3	3.8	8.1	11.5	6.1	8.9	5.7	4.1	4.4	4.2	3.1
2	3.4	3.2	3.6	§15.9	10.0	6.1	9.2	5.4	3.8	4.2	4.2	3.0
3	4.5	3.1	3.7	14.0	8.6	5.6	8.4	5.2	8.2	4.3	3.2	3.2
4	3.9	3.0	3.5	10.0	7.3	5.2	7.7	5.5	8.4	4.3	2.99	2.92
5	4.1	3.0	3.5	8.4	6.8	5.0	7.3	5.2	6.2	3.8	4.8	2.92
6	4.2	3.0	3.4	9.0	6.5	5.1	6.7	4.9	5.3	3.6	6.2	2.77
7	3.7	3.0	3.4	8.0	8.2	6.9	6.2	4.8	4.8	3.4	4.6	2.99
8	3.4	2.95	3.4	6.6	7.0	10.7	5.9	4.8	5.2	3.1	4.1	3.0
9	3.2	2.95	3.4	5.9	6.7	8.4	6.0	4.7	5.6	3.2	3.7	3.1
10	3.0	2.95	3.5	5.8	6.2	7.2	5.9	4.6	6.8	3.1	3.9	3.1
11	2.92	2.90	3.3	7.9	5.8	6.2	6.2	4.4	7.4	3.5	3.7	3.4
12	2.90	2.88	3.3	10.4	5.9	5.8	7.0	4.2	6.7	3.2	7.2	2.75
13	2.80	2.90	3.3	11.9	10.2	5.7	7.4	4.0	5.8	3.1	5.7	2.65
14	2.72	2.90	3.9	10.8	9.6	7.8	7.8	3.9	5.1	4.1	4.4	2.57
15	2.68	4.0	*	8.4	7.8	9.9	11.4	3.6	5.1	3.8	3.9	3.0
16	2.68	5.2	-------	7.6	7.3	8.7	9.0	5.0	8.1	3.3	3.6	4.0
17	2.68	4.6	-------	6.8	7.0	7.6	7.9	9.9	11.8	3.1	3.6	3.0
18	2.68	4.0	‡18.2	*	6.6	6.6	7.2	7.2	9.4	3.1	3.6	3.2
19	†13.1	4.0	13.4	-------	6.4	6.4	6.3	6.2	8.9	3.1	3.3	2.95
20	10.0	6.6	9.6	-------	5.6	5.9	5.9	5.2	9.7	2.97	3.1	2.82
21	7.2	6.0	7.8	-------	5.6	6.2	5.6	4.9	8.0	2.92	2.87	2.77
22	5.8	6.0	6.7	14.4	5.4	¶14.4	6.2	4.6	8.7	††8.1	2.87	2.77
23	5.0	5.5	6.3	10.4	6.9	18.2	7.1	4.7	7.3	4.4	3.4	2.77
24	4.5	5.1	5.9	8.4	8.0	11.6	6.3	5.0	6.4	3.8	4.4	2.77
25	4.2	4.8	5.6	7.4	10.0	11.0	6.2	1.4	7.0	3.4	3.6	2.69
26	4.0	4.6	5.0	6.8	8.6	13.8	7.4	4.6	7.6	3.4	3.3	2.67
27	3.8	4.4	7.4	6.4	7.6	15.6	7.3	4.2	6.3	3.5	3.5	2.62
28	3.7	4.2	8.0	6.1	6.7	18.1	7.1	4.1	5.6	3.3	3.5	2.57
29	3.6	4.1	11.4	5.9	6.4	14.2	6.0	4.3	5.3	3.0	4.1	2.72
30	3.5	4.0	12.4	6.8	-------	11.5	6.0	4.2	4.7	2.85	3.8	3.6
31	3.4	-------	8.2	9.7	-------	10.0	-------	4.6	-------	2.69	3.3	-------

NOTES—*River frozen December 15 to 1 p. m. December 17, 1915, and January 18 to noon January 21, 1916, inclusive. †Maximum 14.6 feet at 4:45 p. m. ‡Maximum 19.4 feet at 4:45 p. m. §Maximum estimated 17.0 feet at 10 p. m. ¶Maximum estimated 20.0 feet at midnight. ††Maximum 7.8 feet at 4:45 p. m.

Daily Discharge, in Second-feet, of Kiskiminitas River at Avonmore, Westmoreland County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	452	805	1,160	6,110	12,200	3,500	7,310	3,080	1,410	1,680	1,500	665
2	875	735	1,020	§23,400	9,170	3,380	7,780	2,680	1,160	1,500	1,500	600
3	1,770	665	1,090	18,200	6,860	2,920	6,560	2,360	6,260	1,590	735	735
4	1,240	600	945	9,170	5,010	2,460	5,540	2,800	6,500	1,590	594	552
5	1,410	600	945	6,560	4,360	2,250	5,010	2,460	3,620	1,160	2,050	492
6	1,500	600	875	7,460	3,590	2,360	4,240	2,150	2,580	1,020	3,620	464
7	1,090	600	875	7,960	6,260	4,490	3,620	2,050	2,050	875	1,860	594
8	875	570	875	4,120	4,620	10,500	3,260	2,050	2,460	665	1,410	600
9	735	570	875	3,260	4,240	6,560	3,280	1,960	2,920	735	1,090	665
10	660	570	945	3,140	3,620	4,880	3,260	1,860	4,360	695	1,240	665
11	552	540	805	5,820	3,140	3,620	3,020	1,680	5,150	945	1,090	875
12	540	528	805	9,930	3,260	3,140	4,620	1,500	4,240	735	4,880	452
13	480	540	805	13,100	9,560	3,030	5,140	1,320	3,140	695	3,030	400
14	436	540	1,240	10,700	7,460	5,680	5,680	1,240	2,360	1,410	1,680	362
15	415	1,320	*1,100	6,560	5,680	8,980	12,000	1,020	2,360	1,160	1,240	600
16	415	2,490	1,000	5,400	5,010	7,010	7,460	2 250	6,110	805	1,020	1,320
17	415	1,860	3,500	4,360	4,620	5,400	5,880	8,980	12,900	695	1,020	1,020
18	415	1,320	†30,400	*4,000	4,120	4,720	4,880	4,880	8,120	665	1,020	735
19	†15,900	1,320	16,700	3,750	3,860	3,860	3,740	3,620	7,310	665	805	570
20	9,170	4,120	8,400	5,300	2,920	3,260	3,260	2,460	8,630	582	665	492
21	4,880	3,380	5,680	9,500	2,920	3,620	2,220	2,150	5,960	552	522	464
22	3,140	3,380	4,240	19,200	2,680	¶19,200	3,620	1,860	7,010	††3,500	522	464
23	2,250	2,800	3,740	9,930	4,490	30,400	4,750	1,960	5,010	1,680	875	464
24	1,770	2,360	3,260	8,560	5,960	12,400	4,120	2,250	3,860	1,160	1,680	464
25	1,500	2,050	2,920	5,140	9,170	11,100	3,620	1,680	5,400	875	1,020	420
26	1,320	1,860	5,960	4,360	6,860	17,700	5,140	1,860	5,400	875	805	410
27	1,160	1,680	5,140	3,860	5,400	22,500	5,970	1,500	3,740	1,240	945	385
28	1,090	1,500	5,960	3,500	4,240	30,100	4,750	1,410	2,920	805	945	362
29	1,020	1,410	12,000	3,260	3,860	18,700	4,120	1,590	2,580	650	1,410	436
30	945	1,320	14,300	4,490	-------	12,200	3,380	1 500	1,960	510	1,160	1,020
31	875	-------	7,780	8,630	-------	9,170	-------	1,860	-------	420	805	-------

NOTES—*River frozen December 15 to 1 p. m. December 17, 1915, and January 18 to noon January 21, 1916, inclusive, and discharge estimated from climatological data. †Maximum=19,700 second-feet. ‡Maximum=34,500 second-feet. §Maximum=26,700 second-feet. ¶Maximum=36,600 second-feet. ††Maximum=5,010 second-feet.

Estimated Monthly Discharge of Kiskiminitas River at Avonmore, Westmoreland County

(Drainage area 1,720 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	19,700	415	1,910	1.11	1.28
November	4,120	528	1,420	0.83	0.93
December	34,500	805	4,690	2.73	3.15
1916					
January	26,700	3,140	7,570	4.40	5.07
February	12,200	2,680	5,360	3.12	3.36
March	36,600	2,250	8,960	5.22	6.02
April	12,000	2,920	4,920	2.86	3.19
May	8,980	1,020	2,320	1.35	1.56
June	12,900	1,160	4,580	2.66	2.97
July	5,010	420	1,080	0.60	0.69
August	4,880	522	1,380	0.80	0.92
September	1,320	362	592	0.34	0.38
The year	36,600	362	3,730	2.17	29.52

NOTE—River frozen December 15 to 1 p. m. December 17, 1915, and January 18 to noon January 21, 1916, inclusive, and discharge estimated from climatological data

OHIO BASIN—STATION NO. 21

ALLEGHENY RIVER AT FREEPORT

DESCRIPTION OF STATION

Location.—At three span, steel, through truss, county highway bridge at Freeport, Armstrong County.

Records Available.—Discharge measurements from March, 1912, to September, 1916, and gage heights of the Water Supply Commission from March 21, 1915, to September 30, 1916. Gage heights have been observed by the U. S. Weather Bureau from April 16, 1873, to date. For other records on this river see Allegheny River at Larabee, Franklin and Kittanning; also Allegheny River at Red House, N. Y., in the 1911 to 1914 reports of the Water Supply Commission.

Drainage Area.—11,400 square miles, including Buffalo Creek.

Gage.—A staff gage, whose elevation of zero is 741.0 feet above mean sea level, is located on the first pier from the right bank and is read twice daily by Mrs. Anna R. Burtner.

Channel.—The right bank is high, clean and liable to overflow in extreme stages. The left bank is high, clean and does not overflow and the bed is composed of sand, gravel and mud.

Remarks.—In connection with discharge measurements of the Allegheny River at Freeport, measurements are obtained of Buffalo Creek from a two span, steel, through truss, highway bridge at Lane Station, a short distance above the mouth, the combined discharge representing the run-off from the drainage area above Freeport. This station is maintained in co-operation with the U. S. Engineer office in Pittsburgh.

Discharge Measurements of Allegheny River at Freeport, Armstrong County

(Drainage area, 11,400 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
8	Mar. 22	Comstock & Getty,	11,163	8.60	30,468	Surface method
					3,075	Buffalo Cr. (msmd)
					33,543	Total
9	Mar. 23	Comstock & Getty	14,337	12.85	58,328	Surface method
					1,177	Buffalo Cr. (msmd)
					59,505	Total
10	Mar. 23	Comstock & Getty	13,465	11.85	50,466	Surface method
					1,177	Buffalo Cr. (msmd)
					51,643	Total
11	Mar. 27	Comstock & Getty	19,667	18.95	116,891	Surface method
					2,120	Buffalo Cr. (msmd)
					119,011	Total
12	Mar. 28	Comstock & McConnell	24,710	24.85	188,260	Surface method
					954	Buffalo Cr. (msmd)
					189,214	Total
13	Mar. 28	Comstock & McConnell	25,143	25.35	196,530	Surface method
					500	Buffalo Cr. (est.)
					197,030	Total
14	Mar. 29	Comstock & McConnell	25,430	25.60	189,307	Surface method
					500	Buffalo Cr. (est.)
					189,807	Total
15	July 5	Wilson & Weaver	7,612	4.60	10,972	0.6 method
					60	Buffalo Cr. (msmd)
					11,032	Total

Daily Mean Gage Heights, in feet, of Allegheny River at Freeport, Armstrong County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	3.3	3.0	7.6	8.4	11.4	5.5	20.9	9.0	6.2	4.4	2.0	2.2
2	3.6	2.9	6.5	13.7	12.0	5.4	19.5	8.0	5.5	4.2	2.6	2.0
3	4.6	2.8	6.1	17.6	10.6	5.3	17.7	7.4	6.8	3.7	2.3	2.0
4	4.5	2.8	5.4	16.0	9.0	5.0	15.6	7.2	13.8	3.6	2.1	1.8
5	3.8	2.8	5.0	13.8	8.0	4.8	13.6	7.6	11.4	4.5	3.0	1.8
6	3.7	2.7	4.8	14.1	7.2	4.5	12.0	7.5	9.4	4.6	3.1	1.9
7	7.4	2.6	4.7	16.6	7.4	5.0	10.6	7.0	8.2	3.7	3.0	2.6
8	6.8	2.6	4.6	13.9	6.8	9.4	9.4	6.6	7.6	3.4	2.8	2.8
9	5.9	2.6	4.4	11.3	6.2	9.5	8.6	6.2	7.6	3.2	2.7	2.8
10	5.6	2.5	4.4	10.1	6.2	8.4	7.2	5.8	8.0	3.0	2.6	2.8
11	4.8	2.5	3.8	9.8	6.2	7.6	7.0	5.6	8.8	3.1	2.5	3.0
12	5.6	2.6	3.8	10.1	6.2	7.0	8.1	5.2	10.8	3.1	3.6	3.0
13	5.4	2.6	3.6	11.8	6.8	6.4	8.2	4.9	10.4	2.8	3.9	2.8
14	4.9	2.4	3.4	12.4	6.6	7.8	8.9	4.6	9.2	2.8	3.0	2.4
15	4.0	2.7	3.4	10.4	7.4	8.4	16.8	4.5	8.2	4.0	2.6	2.2
16	3.6	3.4	3.4	9.2	*8.6	7.2	16.2	4.4	11.8	3.8	2.6	2.2
17	5.5	3.8	4.6	8.4	9.0	6.6	14.2	7.5	13.2	4.2	2.6	2.6
18	5.4	3.8	13.9	7.8	8.5	6.2	12.9	11.3	12.0	3.6	2.5	2.6
19	†6.8	3.8	15.9	*9.0	7.7	5.6	11.6	11.4	10.4	3.0	2.3	2.4
20	7.4	5.5	13.1	8.8	7.8	5.6	10.2	9.5	12.1	2.8	2.2	2.3
21	7.3	7.8	10.9	10.8	7.8	5.6	9.4	7.6	11.3	2.6	2.0	2.2
22	6.2	8.3	8.8	10.8	8.0	7.8	11.2	6.7	11.0	2.6	1.8	2.2
23	5.7	8.2	8.0	12.2	7.5	12.6	14.8	6.7	9.8	3.0	1.8	2.2
24	5.3	7.4	7.5	12.3	7.6	9.5	14.4	7.8	8.4	2.8	2.3	2.1
25	4.6	6.8	7.3	10.8	9.5	9.0	13.2	8.2	7.4	2.7	2.4	2.0
26	4.2	6.5	9.7	9.0	7.8	12.1	12.0	7.4	7.4	2.6	1.9	1.9
27	3.8	6.4	12.0	8.4	7.0	18.2	11.6	6.6	6.4	2.6	2.0	1.8
28	3.7	7.4	11.3	8.1	6.3	‡24.3	11.0	6.2	5.8	2.5	2.0	1.6
29	3.4	8.6	11.8	8.1	5.6	25.2	9.4	6.2	5.2	2.4	1.9	1.6
30	3.4	8.4	12.0	8.6	-------	23.6	9.2	6.9	4.6	2.4	2.0	1.8
31	3.1	-------	9.5	10.3	-------	21.9	-------	6.7	-------	2.2	2.2	-------

NOTES—*River frozen January 19 to 20, and February 16 to noon February 17, 1916. †Maximum estimated 8.4 feet at 9 p. m. ‡Maximum estimated 25.8 feet at 10 p. m.

OHIO BASIN—STATION NO. 22

DUNKARD CREEK AT "BOBTOWN"

DESCRIPTION OF STATION

Location.—At single span, wooden covered bridge, about 2 miles above the mouth, at "Bobtown," Greene County.

Records Available.—Discharge measurements and gage heights from October 14, 1909, to September 30, 1916.

Drainage Area.—230 square miles.

Gage.—A staff gage, whose elevation of zero is arbitrary, is located on the downstream wing of the left abutment and is read twice daily by Mrs. Enlow Stoneking.

Channel.—Both banks are high and do not overflow; bed is rocky; section is deep and current sluggish at low stages.

Discharge Measurements of Dunkard Creek at "Bobtown," Greene County

(Drainage area, 230 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1915		Sq. ft.	Feet	Sec.-ft.	
6	Oct. 1	Wilson & Shade	398	1.65	118	0.6 method
	1916					
7	June 23	Wilson & Weaver	495	2.62	376	0.6 method

Daily Mean Gage Heights, in feet, of Dunkard Creek at "Bobtown," Greene County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	2.0	1.2	1.4	-------	5.2	2.4	2.4	2.0	1.6	1.4	0.80	0.73
2	†3.8	1.1	1.4	-------	3.6	2.7	2.3	2.0	1.4	1.3	0.79	0.89
3	2.6	1.1	1.4	-------	3.1	2.8	2.3	1.9	1.4	1.2	0.74	0.94
4	2.1	1.1	1.4	-------	2.7	2.5	2.2	2.2	2.6	1.2	0.72	0.86
5	1.9	1.1	1.2	-------	2.6	2.3	2.2	2.1	1.9	1.2	0.70	0.82
6	1.8	1.0	1.3	-------	2.6	2.4	2.3	2.0	1.7	1.1	0.78	0.80
7	1.7	1.1	1.3	-------	3.4	4.6	2.0	2.5	1.6	1.1	1.3	0.76
8	1.6	1.1	1.2	2.4	3.0	3.6	2.0	3.4	2.4	1.0	1.2	0.76
9	1.5	1.0	1.3	2.3	2.7	2.9	2.6	2.7	2.0	1.0	1.3	0.88
10	1.4	1.0	1.2	2.2	2.6	2.7	3.6	2.3	1.8	0.97	1.3	0.82
11	1.4	1.0	*1.5	2.8	2.5	2.5	3.0	2.1	1.8	0.93	1.3	0.80
12	1.3	1.1	1.3	5.4	2.7	2.4	2.7	1.9	1.8	0.89	1.2	0.90
13	1.2	1.1	1.3	4.4	‡5.9	2.3	2.4	1.7	1.7	0.84	1.1	1.0
14	1.2	1.1	1.3	3.4	3.6	2.5	2.3	1.7	1.6	0.84	1.4	1.0
15	1.2	3.4	1.5	2.6	3.1	4.9	2.2	1.6	1.6	0.83	1.2	0.98
16	1.2	3.1	1.5	2.5	2.8	3.6	2.0	1.5	3.1	0.86	1.2	0.95
17	1.2	2.4	2.5	2.1	2.7	3.2	2.0	1.8	2.2	0.93	1.2	0.90
18	1.1	2.0	**	2.2	3.7	2.8	1.9	1.7	2.0	0.96	1.1	1.2
19	2.7	2.2	-------	*2.0	3.2	2.6	1.8	1.5	1.9	0.96	1.1	1.1
20	2.6	3.1	-------	1.9	2.8	2.5	1.8	1.4	1.9	0.92	0.93	1.3
21	2.2	2.7	-------	2.3	2.7	2.4	1.7	1.4	3.0	0.89	0.90	0.98
22	1.8	2.4	-------	2.7	2.5	§7.9	1.8	1.3	4.0	0.91	0.86	0.94
23	1.6	2.1	-------	3.5	2.4	4.1	1.9	1.3	2.6	0.92	0.84	0.93
24	1.5	1.9	-------	2.9	2.3	3.1	1.8	1.3	2.2	1.2	0.80	0.86
25	1.4	1.7	-------	2.5	5.2	2.6	1.8	1.3	2.1	1.2	0.78	0.81
26	1.4	1.6	-------	2.3	3.6	2.4	1.9	1.2	2.0	1.1	0.75	0.80
27	1.3	1.6	-------	2.2	3.2	2.3	2.6	1.2	1.7	1.0	0.75	0.78
28	1.3	1.5	-------	2.1	2.7	2.3	2.8	1.2	1.6	0.94	0.79	0.76
29	1.3	1.5	-------	2.0	2.5	2.6	2.5	1.3	1.5	0.89	0.82	0.82
30	1.3	1.5	-------	2.9	-------	2.7	2.2	1.8	1.4	0.84	0.80	0.86
31	1.2	-------	-------	3.5	-------	2.6	-------	1.6	-------	0.81	0.76	-------

NOTES—*Creek frozen December 11 to 17, 1915, and January 19 to 22, 1916, inclusive. **Gage carried away by ice. †Maximum 4.5 feet at noon. ‡Maximum 6.8 feet at noon. §Maximum 8.8 feet at 8 p. m.

OHIO BASIN—STATION NO. 23

SOUTH FORK TEN MILE CREEK AT POLLOCK'S MILL, GREENE COUNTY

DESCRIPTION OF STATION

Location.—At single span, steel, through truss, highway bridge about two miles below Jefferson, Greene County.

Records Available—Discharge measurements and gage heights from June 22, 1915, to September 30, 1916.

Drainage Area.—190 square miles.

Gage.—A vertical staff gage, whose elevation of zero is arbitrary, is located on the stream face of the right abutment near the lower corner and is read twice daily by James M. Pollock.

Channel.—Both banks are high and do not overflow, and the bed is composed of rocks.

Remarks.—This station is maintained in co-operation with the U. S. Engineer Office in Pittsburgh.

Discharge Measurement of South Fork Ten Mile Creek at Pollock's Mill, Greene County

(Drainage area, 190 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
3	June 26	Wilson & Weaver	111	1.50	51	0.6 method

Daily Mean Gage Heights, in feet, of South Fork Ten Mile Creek at Pollock's Mill, Greene County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	†2.3	1.0	1.2	2.5	4.0	2.0	2.2	1.8	1.5	1.3	1.9	1.1
2	2.2	1.0	1.2	5.0	3.0	2.0	2.2	1.4	1.4	1.2	1.4	1.1
3	2.2	0.8	1.2	2.7	2.4	1.9	2.1	1.2	1.7	1.2	1.4	1.1
4	2.0	0.9	1.2	2.2	2.1	1.8	2.2	1.2	1.8	1.2	1.2	1.0
5	1.7	0.9	1.2	2.1	2.0	1.8	2.1	1.7	1.5	1.2	1.3	0.9
6	1.7	0.9	1.2	2.4	2.2	1.9	1.9	1.6	1.4	1.1	2.2	0.9
7	1.6	1.0	1.1	2.1	2.8	3.4	1.8	2.2	1.4	1.1	2.8	0.9
8	1.4	1.0	1.1	1.9	2.1	3.6	1.6	2.2	1.7	1.1	2.6	1.4
9	1.4	1.1	1.1	1.8	2.1	2.4	2.3	2.1	1.6	1.0	1.4	2.0
10	1.2	1.0	1.1	2.0	2.0	2.2	3.6	2.0	1.5	1.0	1.2	2.0
11	1.2	1.0	1.1	2.4	1.9	2.9	3.4	1.8	1.4	1.0	1.1	1.8
12	1.1	1.0	1.1	4.3	2.2	2.8	2.7	1.6	1.4	0.9	1.2	1.0
13	1.1	1.0	1.2	3.4	3.4	2.2	2.2	1.5	1.4	0.9	1.6	0.9
14	1.0	1.2	1.3	2.6	3.0	2.4	2.1	1.4	1.3	1.0	1.5	0.8
15	1.0	2.6	*1.3	2.1	2.5	3.3	2.0	1.5	1.8	1.4	1.5	2.1
16	1.0	2.3	1.3	2.2	2.4	2.6	1.9	1.5	2.2	1.2	1.6	2.4
17	1.0	1.8	3.9	1.8	2.2	2.6	1.9	1.6	2.1	1.2	1.4	1.5
18	1.0	1.6	5.4	1.8	3.0	2.3	1.6	1.6	2.2	1.2	1.3	1.4
19	1.2	1.8	3.1	2.0	2.6	2.0	1.6	1.4	2.4	1.2	1.3	1.3
20	1.7	2.2	2.4	2.0	2.4	2.1	1.6	1.3	1.5	1.2	1.2	1.3
21	1.4	2.1	2.2	2.3	2.2	§10.8	1.6	1.3	1.6	1.1	1.1	1.2
22	1.3	2.0	2.0	2.4	2.0	4.2	1.7	1.3	2.2	1.1	1.1	1.3
23	1.2	1.8	1.9	2.5	2.2	4.0	1.7	1.4	1.8	1.0	1.0	1.3
24	1.2	1.6	1.8	2.2	2.2	3.4	1.7	1.4	1.6	1.0	1.0	1.5
25	1.1	1.4	1.8	2.0	5.2	2.4	1.7	1.3	1.5	1.0	0.9	1.5
26	1.0	1.2	2.1	1.9	3.1	2.2	1.6	1.3	1.4	1.0	0.8	1.4
27	1.0	1.2	1.8	1.8	2.4	2.2	2.6	1.3	1.1	0.9	0.8	1.4
28	1.0	1.2	2.2	1.7	2.2	3.0	2.4	1.3	1.3	0.8	1.0	1.5
29	1.0	1.3	‡4.8	1.7	2.1	2.9	2.2	1.4	1.3	0.8	1.1	1.6
30	1.0	1.3	3.8	2.0	-------	2.6	2.0	1.4	1.2	0.8	1.2	1.7
31	1.0	-------	2.6	2.4	-------	2.4	-------	1.6	-------	0.8	1.2	-------

NOTES—*Creek frozen December 15 to 17, 1915, inclusive. †Maximum 3.5 feet at 6 p. m. ‡Maximum 6.6 feet at 8 p. m. §Maximum estimated 12.0 feet at 1 p. m.

OHIO BASIN—STATION NO. 24

MONONGAHELA RIVER AT SOUTH BROWNSVILLE

DESCRIPTION OF STATION

Location.—At four span, steel, through truss, highway bridge, known as "Brownsville Bridge," one-quarter mile below Lock No. 5, South Brownsville, Fayette County.

Records Available.—Discharge measurements and gage heights from February 18, 1915, to September 30, 1916.

Drainage Area.—5,130 square miles.

Gage.—A staff gage, whose elevation of zero is 726.23 feet above mean sea level, is located on the downstream side of Lock No. 5 and is read twice daily by Charles W. Keibler.

Channel.—The right bank is high and not subject to overflow. The left bank overflows at extreme stages. The bed is composed of sand, gravel and mud.

Remarks.—This station is maintained in co-operation with the U. S. Engineer Office in Pittsburgh.

Discharge Measurements of Monongahela River at South Brownsville, Fayette County

(Drainage area, 5,130 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
3	Feb. 14	Getty & Inglefield	14,740	26.65	56,215	Surface method
4	Feb. 25	Inglefield & Tucker	9,557	18.55	30,277	Surface method
5	Feb. 25	Inglefield & Tucker	10,798	20.45	37,526	Surface method
6	Feb. 25	Inglefield & Tucker	11,493	21.55	40,837	Surface method
7	Feb. 26	Inglefield & Tucker	10,917	20.70	34,777	Surface method
8	Feb. 26	Inglefield & Tucker	10,470	19.75	31,205	Surface method
9	Mar. 8	Inglefield & Norman	13,367	24.40	51,032	Surface method
10	Mar. 15	Inglefield & Norman	12,489	23.10	51,326	Surface method. Strong downstream wind
11	Mar. 22	Inglefield & Watkins	15,000	26.90	65,904	Surface method. Strong downstream wind
12	Mar. 23	Inglefield & Watkins	17,255	30.40	78,072	Surface method
13	Mar. 23	Inglefield & Davis	15,963	28.40	67,235	
14	June 24	Wilson & Weaver	6,097	12.90	10,501	0.6 method

Daily Mean Gage Heights, in feet, of Monongahela River at South Brownsville, Fayette County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	11.0	10.4	11.2	17.0	21.6	12.7	13.8	12.6	11.0	10.4	11.4	10.2
2	†24.5	10.4	11.1	26.2	22.2	12.8	13.1	11.9	10.8	10.0	10.9	10.2
3	19.8	10.4	11.0	25.4	18.4	13.5	12.6	11.6	10.6	9.8	10.6	10.2
4	15.3	10.4	11.0	18.4	15.8	14.1	12.3	11.5	10.8	9.6	10.4	10.2
5	13.1	10.4	11.0	15.4	14.4	13.4	12.8	11.5	10.8	10.8	10.4	10.2
6	12.2	10.3	11.0	14.6	14.0	12.9	13.3	11.6	10.4	10.4	11.4	10.0
7	12.1	10.3	11.0	15.4	16.6	15.2	12.7	11.6	10.4	10.0	12.1	10.2
8	11.5	10.4	10.8	14.8	18.4	24.1	12.4	15.3	10.8	9.8	11.8	10.3
9	11.0	10.6	10.8	13.5	16.2	20.2	12.5	14.6	10.8	9.6	11.8	10.5
10	10.8	10.6	10.8	12.9	15.4	16.0	13.7	13.4	10.6	9.6	11.5	10.5
11	10.6	10.6	10.8	14.7	14.9	14.2	13.8	12.3	10.7	9.2	11.4	10.4
12	10.4	10.6	10.7	§29.4	14.4	13.0	14.1	11.6	11.0	9.2	11.2	10.3
13	10.2	10.6	10.6	29.8	¶27.4	12.5	14.4	11.4	10.6	9.3	12.3	10.2
14	10.0	10.6	10.7	23.0	27.8	12.8	13.9	10.8	10.3	10.4	13.8	10.4
15	9.7	12.8	10.9	17.6	19.5	20.8	13.4	10.6	10.2	10.4	12.7	10.5
16	10.2	20.8	11.1	15.1	15.8	22.0	13.2	10.6	12.8	10.3	11.8	13.0
17	10.4	17.6	15.6	13.8	14.5	17.6	12.6	10.8	14.3	10.5	11.4	14.0
18	10.4	14.5	‡33.9	13.0	14.6	15.2	12.2	11.1	13.6	10.7	11.3	12.4
19	11.0	13.3	30.6	11.7	14.1	14.0	12.4	11.2	12.0	11.7	11.0	11.5
20	13.3	14.6	21.8	11.5	13.4	13.2	12.2	10.8	11.7	12.3	11.0	11.2
21	13.0	14.9	16.2	12.5	13.0	12.8	11.8	10.6	12.6	11.6	10.8	11.0
22	12.4	14.2	14.2	16.5	12.8	22.5	11.6	9.6	16.2	11.2	10.6	10.8
23	11.6	13.4	13.2	17.6	13.0	‡‡29.2	11.6	10.0	14.3	11.2	10.6	10.7
24	11.2	12.8	12.6	16.8	12.8	21.5	11.8	10.0	12.5	11.3	10.8	10.2
25	11.0	12.2	12.2	15.2	19.8	16.6	11.7	10.0	12.8	11.2	10.8	10.0
26	10.8	11.9	12.3	13.8	20.2	14.4	13.0	10.0	15.0	11.2	10.6	10.2
27	10.8	11.6	12.7	13.0	16.4	13.5	15.2	10.0	13.3	11.1	10.5	10.3
28	10.7	11.4	13.2	12.7	14.0	14.0	14.9	10.2	11.9	10.0	10.5	10.2
29	10.7	11.3	20.0	12.2	13.2	15.8	13.8	11.1	11.0	10.7	10.4	10.2
30	10.6	11.2	28.0	15.2	-------	16.2	13.4	11.4	10.6	10.8	10.4	11.1
31	10.6	-------	21.5	22.6	-------	14.9	-------	10.9	-------	10.7	10.3	-------

NOTES.—†Maximum 25.4 feet at noon. ‡Maximum 35.5 feet at 9:30 p. m. §Maximum 34.0 feet at 9:30 p. m. ¶Maximum 32.5 feet at 10 p. m. ‡‡Maximum 31.0 feet at 4 a. m.

OHIO BASIN—STATION NO. 25

YOUGHIOGHENY RIVER AT CONFLUENCE

DESCRIPTION OF STATION

Location.—At two span, steel, through truss, highway bridge about one-half mile from Confluence, Somerset County.

Records Available.—Discharge complete from September 15, 1904, to September 30, 1914, and discharge measurements and gage heights from October 1, 1914, to September 30, 1916. For other records on this river see Youghiogheny River at Connellsville and Sutersville; also Youghiogheny River at Friendsville, Md., in the 1910-11 Report of the Water Supply Commission.

Drainage Area.—435 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the downstream side of the bridge and is read once daily by L. L. Mountain.

Channel.—The right bank is high and does not overflow, the left bank is low, clean and overflows during high stages, and the bed is rocky.

Remarks.—There is a small cobblestone dam 4 to 6 inches high under the bridge.

Discharge Measurements of Youghiogheny River at Confluence, Somerset County

(Drainage area, 435 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1915		Sq. ft.	Feet	Sec.-ft.	
25	Oct. 2	Wilson & Shade	1,222	6.26	4,576	Surface method
	1916					
26	Mar. 23	Knight	2,100	9.89	8,348	Surface method
27	Mar. 23	Knight	1,725	8.39	6,353	Surface method
28	Mar. 24	Knight	1,187	6.31	4,235	Surface method
29	Mar. 24	Knight	1,135	6.04	3,978	Surface method
30	June 21	Wilson & Weaver	1,111	6.00	4,267	Surface method
31	June 22	Wilson & Weaver	872	5.06	2,781	0.6 method

Daily Mean Gage Heights, in feet, of Youghiogheny River at Confluence, Somerset County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	2.1	2.1	2.5	4.9	5.3	2.9	3.9	3.0	2.4	3.2	2.1	2.3
2	6.2	2.0	2.5	10.0	4.6	2.8	3.7	2.9	2.4	3.1	2.1	2.2
3	4.4	2.0	2.5	6.6	4.1	2.8	3.5	3.0	2.3	2.9	2.4	2.6
4	3.7	2.0	2.4	4.9	3.7	2.5	3.4	2.9	2.2	2.6	3.8	2.5
5	3.5	2.1	2.4	4.8	3.5	2.7	3.2	2.8	2.2	2.4	3.4	2.4
6	3.3	2.2	2.3	4.6	3.4	2.6	3.1	2.9	2.3	2.2	3.2	2.7
7	3.0	2.2	2.3	4.5	3.3	3.9	3.0	3.0	2.4	2.4	2.8	2.6
8	2.7	2.2	2.3	4.3	3.4	5.7	3.0	3.4	2.6	2.5	2.7	2.5
9	2.6	2.1	2.3	3.8	3.8	4.3	3.0	3.2	2.6	2.3	2.6	2.4
10	2.5	2.4	2.2	3.4	9.7	3.9	3.0	3.2	3.0	2.2	2.5	2.3
11	2.4	2.2	2.1	3.2	3.8	3.4	4.0	3.2	2.7	2.1	2.4	2.3
12	2.4	2.2	2.1	3.1	3.9	3.3	4.4	3.1	2.5	1.95	2.4	2.2
13	2.3	2.2	2.0	3.1	†9.7	3.3	3.9	3.0	2.4	1.90	2.6	2.2
14	2.2	2.2	1.94	3.1	7.2	6.9	4.4	3.0	2.2	1.90	2.6	2.8
15	2.2	2.2	2.2	3.3	5.8	8.9	4.1	2.8	4.4	1.85	2.4	3.5
16	2.1	4.8	4.7	4.0	4.7	5.5	3.8	2.8	3.9	1.80	2.4	3.3
17	2.1	3.5	6.2	3.5	3.8	4.5	3.4	2.8	6.2	2.3	2.4	2.8
18	2.1	3.2	11.0	2.2	3.7	3.6	3.2	2.7	4.2	2.4	2.3	2.2
19	2.6	3.0	6.6	2.8	3.5	3.5	3.0	2.6	4.1	2.6	2.2	2.0
20	3.4	3.0	5.3	3.1	3.3	3.3	3.0	2.6	4.3	2.4	2.2	1.90
21	3.2	3.9	4.4	4.0	3.2	3.9	3.0	2.5	5.2	2.3	2.1	1.80
22	3.1	3.5	3.6	3.6	3.3	‡11.3	3.0	2.4	4.9	2.2	2.0	1.80
23	3.0	3.3	3.4	3.2	3.3	9.1	3.0	2.4	4.0	2.4	2.2	1.90
24	2.8	3.2	3.2	3.1	3.4	6.0	3.4	2.4	3.4	2.2	2.2	1.80
25	2.7	3.2	3.1	3.3	3.3	5.0	3.5	2.5	5.5	2.2	2.1	1.75
26	2.6	3.1	3.1	3.2	3.2	4.9	4.6	2.5	4.6	2.1	2.1	1.65
27	2.5	3.0	3.2	3.1	3.2	4.9	4.4	2.4	3.8	2.0	2.2	1.60
28	2.4	2.9	3.3	3.3	3.1	7.2	4.0	2.4	3.6	1.90	2.2	1.60
29	2.3	2.8	7.4	3.6	3.0	5.9	3.2	2.5	3.4	2.3	2.3	2.4
30	2.2	2.6	6.6	5.2	-------	5.2	3.2	2.6	3.5	2.3	2.2	2.7
31	2.1	-------	5.0	4.8	-------	4.4	-------	2.6	-------	2.2	2.2	-------

NOTES.—†Maximum 10.5 feet at 11:25 a. m. ‡Maximum 16.9 feet at 8 p. m.

OHIO BASIN—STATION NO. 26

CASSELMAN RIVER AT MARKLETON

DESCRIPTION OF STATION

Location.—At two span, steel, through truss, highway bridge at B. & O Railroad Station, Markleton, Somerset County.

Records Available.—Discharge measurements and gage heights from August 13, 1913, to December 31, 1913, and from June 13, 1914, to September 30, 1916. For other records on this river see Casselman River at Confluence in the 1911 to 1913 reports of the Water Supply Commission.

Drainage Area.—365 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the downstream side of the bridge and is read twice daily by N. B. Sanner.

Channel.—Both banks are high and do not overflow, and the bed is composed of gravel and boulders.

Discharge Measurements of Casselman River at Markleton, Somerset County

(Drainage area, 365 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1915		Sq. ft.	Feet	Sec.-ft.	
4	Oct. 2	Wilson & Shade	617	4.54	1,775	Surface method
	1916					
5	June 21	Wilson & Weaver	419	3.50	606	0.6 method

Daily Mean Gage Heights, in feet, of Casselman River at Markleton, Somerset County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	3.8	2.70	2.74	4.7	4.8	3.2	4.2	3.6	2.53	3.0	2.15	2.12
2	4.8	2.52	2.82	8.0	4.3	3.2	4.1	3.4	2.51	2.95	2.15	2.08
3	4.0	2.60	2.84	5.8	4.0	3.1	4.0	3.4	2.79	2.85	2.10	2.00
4	3.5	2.45	2.79	4.9	3.8	3.0	3.8	3.4	3.0	2.80	2.38	1.95
5	3.4	2.60	2.79	4.4	3.8	3.0	3.8	3.2	2.71	2.68	2.70	1.95
6	3.2	2.45	2.74	4.2	4.7	3.1	3.8	3.2	2.59	2.60	2.92	1.90
7	3.0	2.60	2.74	4.1	4.1	3.5	3.6	3.2	2.69	2.55	2.72	2.78
8	2.91	2.40	2.74	3.7	3.9	4.6	3.6	3.2	2.77	2.52	2.60	2.65
9	2.84	2.50	2.74	3.4	3.9	3.9	3.6	3.1	2.76	2.48	2.82	2.42
10	2.76	2.40	2.74	3.6	3.7	3.8	3.5	2.90	3.7	2.45	2.50	2.28
11	2.71	2.50	2.74	4.4	3.5	3.5	4.8	2.85	3.2	2.42	2.35	2.12
12	2.66	2.40	2.74	5.7	4.1	3.4	4.8	2.80	2.91	2.36	2.30	2.05
13	2.64	2.62	2.82	5.4	5.7	3.4	4.4	2.75	2.77	2.45	2.30	2.02
14	2.56	2.48	2.92	4.7	4.9	5.9	5.2	2.70	2.69	2.55	2.45	2.05
15	2.51	3.6	2.99	4.1	4.6	6.2	4.7	2.70	3.6	2.45	2.35	3.1
16	2.48	3.6	3.0	4.0	4.3	5.2	4.3	3.4	4.6	2.32	2.22	2.92
17	2.46	3.4	4.5	3.5	4.1	4.3	4.1	3.5	5.2	2.38	2.20	2.60
18	2.46	2.98	7.1	3.3	3.9	3.7	3.9	3.1	4.2	2.58	2.16	2.35
19	4.0	4.0	5.5	3.2	3.6	3.8	3.6	2.88	3.9	2.52	2.12	2.22
20	3.7	4.1	4.6	3.5	3.4	3.6	3.5	2.80	3.8	2.38	2.08	2.15
21	3.5	3.8	4.1	4.5	3.4	3.6	3.6	2.70	3.7	2.30	2.00	2.08
22	3.2	3.6	3.8	4.3	3.4	†7.4	3.9	2.70	4.6	2.95	1.92	2.08
23	3.0	3.5	3.6	4.3	3.6	6.5	3.8	2.82	3.9	2.72	3.6	2.15
24	2.94	3.3	3.5	3.8	3.6	5.2	3.6	2.90	3.6	2.42	2.60	2.10
25	2.84	3.3	3.6	3.6	3.5	5.2	3.9	2.75	5.0	2.48	2.30	2.05
26	2.78	3.1	4.0	3.6	3.3	5.2	4.6	2.70	4.1	2.80	2.18	2.00
27	2.78	3.1	4.0	3.6	3.1	6.9	4.6	2.60	3.6	2.60	2.35	2.00
28	2.71	3.0	4.7	3.6	3.1	5.9	4.2	2.58	3.6	2.42	2.30	1.92
29	2.71	2.98	6.1	3.4	3.2	5.3	4.0	2.55	3.3	2.38	2.35	3.8
30	2.71	2.80	5.5	3.7	-------	4.8	3.8	2.55	3.1	2.25	2.28	3.3
31	2.71	-------	4.7	4.7	-------	4.4	-------	2.55	-------	2.18	2.20	-------

NOTE.—†Maximum 8.9 feet at 5 p. m.

OHIO BASIN—STATION NO. 27

LAUREL HILL CREEK AT URSINA

DESCRIPTION OF STATION

Location.—At two span, steel, through truss, highway bridge at Ursina, Somerset County.

Records Available.—Discharge measurements and gage heights from August 12, 1913, to September 30, 1916. For other records on this creek see Laurel Hill Creek at Confluence in the 1911 to 1913 reports of the Water Supply Commission.

Drainage Area.—122 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the upstream side of the bridge and is read twice daily by L. R. Case.

Channel.—Both banks are high and not subject to overflow, and the bed is composed of gravel and stones.

Discharge Measurements of Laurel Hill Creek at Ursina, Somerset County
(Drainage area, 122 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1915		Sq. ft.	Feet	Sec.-ft.	
4	Oct. 2	Wilson & Shade	293	3.26	973	0.6 method
5	M[illegible]	ight	518	4.67	2,028	Surface measurement
6	June 2[illegible]	on & Weaver	261	3.08	567	0.6 method

Daily Mean Gage Heights, in feet, of Laurel Hill Creek at Ursina, Somerset County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	2.6	1.90	2.1	3.4	3.8	2.5	3.0	2.5	2.0	2.2	1.90	1.80
2	3.2	1.90	2.1	6.3	3.4	2.4	3.0	2.4	2.0	2.2	1.90	1.90
3	3.2	1.90	2.2	4.4	3.0	2.4	2.8	2.6	2.2	2.1	1.85	1.80
4	2.4	1.90	2.1	3.4	2.8	2.4	2.8	2.5	2.4	2.2	1.90	1.80
5	2.3	1.90	2.1	3.2	2.9	2.4	2.8	2.4	2.1	2.0	2.0	1.75
6	2.2	1.90	2.1	3.4	2.6	2.3	2.6	2.2	2.2	1.90	2.2	1.80
7	2.1	1.90	2.1	3.0	3.2	2.8	2.6	2.4	2.2	1.90	2.0	1.80
8	2.0	1.90	2.1	2.8	2.8	3.4	2.5	2.4	2.3	1.90	1.95	1.80
9	2.0	1.90	2.0	2.6	2.8	3.0	2.6	2.2	2.4	2.1	2.2	1.80
10	2.0	1.90	2.2	2.6	2.6	2.8	2.5	2.2	2.4	2.0	2.0	1.75
11	2.0	1.90	2.2	3.5	2.6	2.6	2.8	2.2	2.4	2.1	2.0	1.80
12	2.0	1.90	2.3	4.0	2.8	2.5	3.2	2.2	2.2	2.0	1.90	1.80
13	1.90	2.0	2.2	3.9	4.4	2.6	3.0	2.2	2.2	1.90	2.0	1.80
14	1.90	2.0	*2.2	3.6	3.4	4.0	3.9	2.1	2.1	2.2	2.0	1.95
15	1.90	3.0	2.3	3.3	3.2	4.6	3.8	2.1	2.4	2.1	1.90	2.4
16	1.90	2.6	2.4	3.0	3.0	3.6	3.0	2.2	3.2	2.0	1.90	2.2
17	1.90	2.4	3.8	2.6	2.8	3.1	3.0	2.6	4.2	2.0	1.90	1.90
18	1.90	2.3	5.8	2.4	2.6	2.8	2.8	2.4	3.4	2.2	1.90	1.90
19	3.2	2.8	4.1	2.9	2.6	2.7	2.6	2.3	3.2	2.0	1.90	1.90
20	3.0	3.0	3.4	2.5	2.6	2.6	2.5	2.2	2.9	1.85	1.75	1.85
21	2.6	2.7	3.0	3.2	2.4	2.6	2.4	2.1	2.9	1.90	1.80	1.90
22	2.4	2.6	2.8	3.2	2.4	†6.7	2.5	2.2	3.0	2.0	1.80	1.80
23	2.3	2.6	2.7	3.2	2.8	4.9	2.5	2.3	2.8	2.1	1.90	1.80
24	2.2	2.5	2.4	3.0	2.8	3.8	2.5	2.3	2.6	2.4	1.90	1.80
25	2.1	2.4	2.6	2.8	2.9	3.7	2.8	2.3	3.1	2.4	1.75	1.75
26	2.1	2.2	3.0	2.6	2.8	4.1	2.9	2.2	2.6	2.2	1.80	1.80
27	2.0	2.3	2.8	2.6	2.6	4.3	3.0	2.2	2.5	2.1	1.80	1.80
28	2.0	2.2	3.1	2.4	2.5	5.0	3.0	2.2	2.4	2.0	1.95	1.80
29	2.0	2.2	4.0	2.5	2.6	4.0	2.7	2.2	2.4	1.90	1.80	1.95
30	2.0	2.1	3.9	3.4	-------	3.8	2.6	2.2	2.2	1.90	1.75	1.95
31	2.0	-------	3.3	3.4	-------	3.3	-------	2.1	------	1.90	1.80	-------

NOTES.—*Creek frozen December 14 to 17, 1915, inclusive. †Maximum 8.0 feet at noon.

OHIO BASIN—STATION NO. 28

YOUGHIOGHENY RIVER AT CONNELLSVILLE

DESCRIPTION OF STATION

Location.—At two span, steel, through truss, highway bridge between Connellsville and New Haven.

Records Available.—Discharge complete from July 22, 1908, to September 30, 1916. For other records on this river see Youghiogheny River at Confluence and Sutersville; also Youghiogheny River at Friendsville, Md., in the 1910-11 Report of the Water Supply Commission.

Drainage Area.—1,320 square miles.

Gage.—A standard chain gage, whose elevation of zero is 860.131 feet above mean sea level, is located on the downstream side of the New Haven span and is read twice daily by the West Penn Railways Company.

Channel.—Both banks are high and not subject to overflow, and the bed is composed of rocks, gravel and mud.

Discharge Measurements of Youghiogheny River at Connellsville, Fayette County

(Drainage area, 1,320 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
24	June 22	Wilson & Weaver	1,966	5.46	7,164	Surface method
25	June 24	Wilson & Weaver	1,432	3.60	3,198	0.6 method

Daily Mean Gage Heights, in feet, of Youghiogheny River at Connellsville, Fayette County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	1.7	1.5	2.0	5.4	6.8	2.9	5.2	3.5	1.9	2.4	1.1	1.0
2	6.1	1.5	2.0	10.7	5.8	2.9	4.8	3.1	1.7	2.2	1.1	1.0
3	4.5	1.5	2.0	8.2	5.0	2.6	4.4	3.0	1.8	2.1	1.0	0.72
4	3.6	1.4	1.9	6.0	4.3	2.4	4.0	3.0	2.5	2.0	1.0	0.90
5	3.0	1.4	1.8	5.0	3.8	2.3	4.0	2.9	2.2	1.8	1.4	0.90
6	2.8	1.3	1.8	5.8	4.4	2.4	3.6	2.6	1.8	1.6	2.6	0.80
7	2.6	1.4	1.7	4.8	5.3	3.4	3.4	2.8	1.8	1.6	2.6	0.65
8	2.2	1.4	1.6	4.1	4.6	6.7	3.2	3.2	2.0	1.4	2.9	0.90
9	2.0	1.7	1.8	3.4	4.5	5.2	3.3	2.9	2.1	1.4	2.3	1.4
10	1.8	1.6	1.4	3.4	4.0	4.4	3.1	2.7	2.4	1.3	2.0	1.0
11	1.8	1.4	1.4	4.9	3.6	3.7	4.4	2.5	2.7	1.4	1.8	1.0
12	1.7	1.4	1.5	7.5	3.8	3.5	4.7	2.4	2.4	1.3	1.6	0.82
13	1.6	1.5	1.8	7.4	10.2	3.4	4.9	2.3	2.1	1.3	1.6	0.78
14	1.5	1.6	1.6	6.2	7.2	6.4	5.3	2.2	1.9	1.3	1.7	0.65
15	1.4	3.3	1.3	5.0	5.6	9.5	5.6	2.0	2.0	1.3	1.6	1.0
16	1.4	4.5	1.3	4.6	4.9	6.8	4.5	2.5	5.5	1.3	1.4	3.0
17	1.3	3.5	4.8	4.1	4.4	5.1	4.1	3.6	7.4	1.2	1.2	3.0
18	1.3	2.8	11.0	2.6	4.0	4.5	3.7	3.0	5.1	1.7	1.2	1.6
19	3.5	3.1	8.1	3.0	3.8	4.1	3.4	2.6	4.2	2.0	1.2	1.3
20	3.9	4.6	5.8	3.0	3.4	3.6	3.0	2.3	4.2	1.5	1.0	1.2
21	3.3	4.0	4.8	4.7	3.4	3.7	2.9	2.1	4.0	1.4	0.92	1.2
22	2.8	3.7	4.0	5.0	3.2	†11.3	3.0	2.1	5.7	1.9	0.92	1.0
23	2.4	3.3	3.6	5.3	3.7	10.6	3.5	2.1	4.5	2.1	1.2	1.1
24	2.2	3.0	3.4	4.5	3.6	7.2	3.3	2.2	3.7	1.7	1.6	0.82
25	2.0	2.8	3.5	3.8	4.0	6.3	3.4	2.2	5.6	1.8	1.3	0.78
26	1.9	2.7	3.8	3.6	3.7	6.2	4.6	2.0	5.2	2.3	1.0	0.70
27	1.9	2.5	4.0	3.4	3.2	6.0	5.3	1.9	3.9	1.8	1.0	0.60
28	1.8	2.4	4.5	3.2	2.8	8.1	4.8	1.8	3.4	1.4	1.1	0.70
29	1.8	2.4	7.3	3.1	2.8	7.2	4.4	1.8	2.9	1.2	1.2	1.0
30	2.0	2.2	7.9	4.2	-------	6.3	3.8	1.9	2.6	1.1	1.2	2.6
31	1.6	-------	5.4	5.8	-------	5.6	-------	2.1	-------	1.0	1.2	-------

NOTE.—†Maximum estimated 15.0 feet at 9 p. m.

Daily Discharge, in Second-feet, of Youghiogheny River at Connellsville, Fayette County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	710	570	960	6,590	8,860	2,000	6,160	2,980	870	1,360	325	270
2	8,300	570	960	24,600	7,520	2,000	5,350	2,300	710	1,140	325	270
3	4,770	570	960	14,900	5,740	1,590	4,580	2,140	790	1,050	270	148
4	3,150	500	870	8,040	4,400	1,360	3,860	2,140	1,470	960	270	220
5	2,140	500	790	5,740	3,500	1,250	3,860	2,000	1,140	790	500	220
6	1,860	440	790	6,370	4,589	1,360	3,150	1,590	790	640	1,590	180
7	1,590	500	710	5,350	6,370	2,810	2,810	1,860	790	640	1,590	128
8	1,140	500	640	4,040	4,960	10,100	2,470	2,470	960	500	2,000	220
9	960	710	790	2,810	4,400	6,160	2,640	2,000	1,050	500	1,250	500
10	790	640	500	2,810	3,860	4,580	2,300	1,720	1,360	440	960	270
11	790	500	500	5,540	3,150	3,320	4,580	1,470	1,720	500	790	270
12	710	500	570	12,600	3,500	2,980	5,160	1,360	1,360	440	640	188
13	640	570	790	12,200	22,400	2,810	5,540	1,250	1,050	440	640	172
14	570	640	640	8,580	11,600	9,150	6,370	1,140	870	440	710	128
15	500	2,640	440	5,740	7,050	19,600	7,050	960	960	440	640	270
16	500	4,770	440	4,960	5,540	10,400	4,770	1,470	6,820	440	500	2,140
17	440	2,980	5,350	4,040	4,580	5,950	4,040	3,150	12,200	380	380	2,140
18	440	1,860	25,900	1,590	3,860	4,770	3,320	2,140	5,950	710	380	640
19	2,980	2,300	14,500	2,140	3,500	4,040	2,810	1,590	4,220	960	380	440
20	3,680	4,960	7,520	2,140	2,810	3,150	2,140	1,250	4,220	570	270	380
21	2,640	3,860	5,350	5,160	2,810	3,320	2,000	1,050	3,860	500	230	380
22	1,860	3,320	3,860	5,740	2,470	†27,200	2,140	1,050	7,280	870	230	270
23	1,360	2,640	3,150	6,370	3,320	24,100	2,980	1,050	4,770	1,050	380	325
24	1,140	2,140	2,810	4,770	3,150	11,600	2,640	1,140	3,320	710	640	188
25	960	1,860	2,980	3,500	3,860	8,860	2,810	1,140	7,050	790	440	172
26	870	1,720	3,500	3,150	3,320	8,580	4,960	960	6,160	1,250	270	140
27	870	1,470	3,860	2,810	2,470	8,040	6,370	870	3,680	790	270	115
28	790	1,360	4,770	2,470	1,860	14,500	5,350	790	2,810	500	325	140
29	790	1,360	11,900	2,300	1,860	11,600	4,580	790	2,000	380	380	270
30	960	1,140	13,900	4,220	-------	8,860	3,500	870	1,590	325	380	1,590
31	640	-------	6,590	7,520	-------	7,050	-------	1,050	-------	270	380	-------

NOTES.—†Maximum=41,600 second-feet. Discharge above 36,850 is estimated.

Estimated Monthly Discharge of Youghiogheny River at Connellsville, Fayette County

(Drainage area, 1,320 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	8,300	440	1,600	1.21	1.40
November	4,960	440	1,600	1.21	1.35
December	25,900	440	880	0.67	0.77
1916					
January	24,600	1,590	6,090	4.61	5.32
February	22,400	1,860	5,080	3.85	4.15
March	††41,600	1,250	7,520	5.70	6.57
April	7,050	2,000	4,010	3.04	3.39
May	3,150	790	1,540	1.17	1.35
June	12,200	710	3,060	2.32	2.59
July	1,360	270	670	0.51	0.59
August	2,000	230	591	0.45	0.52
September	2,140	115	426	0.32	0.36
The year	††41,600	115	2,750	2.08	28.36

NOTE.—††Estimated.

OHIO BASIN—STATION NO. 29

YOUGHIOGHENY RIVER AT SUTERSVILLE

DESCRIPTION OF STATION

Location.—At three span, steel, through truss, county highway bridge at lower end of Sutersville, Westmoreland County.

Records Available—Discharge measurements and gage heights from June 11, 1915, to September 30, 1916. For other records on this river see Youghiogheny River at Confluence and Connellsville; also Youghiogheny River at Friendsville, Md., in the 1910-11 Report of the Water Supply Commission.

Drainage Area.—1,680 square miles.

Gage.—A standard chain gage, whose elevation of zero is 733.141 feet above mean sea level, is located on the downstream side of the bridge and is read twice daily by Archie W. McGrew.

Channel.—The right bank is low and overflows, the left bank is high and overflows at extreme stages, and the bed is generally rocky with shifting bars of sand and gravel.

Remarks.—This station is maintained in co-operation with the U. S. Engineer Office in Pittsburgh.

Discharge Measurement of Youghiogheny River at Sutersville, Westmoreland County

(Drainage area, 1,680 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
3	June 27	Wilson & Weaver ------ ----	2,365	5.92	4,819	0.6 method

Daily Mean Gage Heights, in feet, of Youghiogheny River at Sutersville, Westmoreland County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	3.39	3.37	4.0	6.8	8.6	5.7	6.6	5.4	3.8	4.4	3.36	3.02
2	†5.8	3.32	4.0	§12.6	8.0	5.6	6.4	5.1	3.6	4.4	3.22	2.89
3	6.6	3.29	3.8	11.3	6.9	4.8	6.1	4.9	4.6	4.4	3.06	2.84
4	5.5	3.31	3.8	8.2	6.2	4.6	6.0	5.0	4.5	3.7	3.6	2.79
5	5.0	3.25	3.8	7.0	6.0	4.5	5.8	4.8	4.3	3.5	4.3	2.74
6	4.7	3.19	3.6	6.8	5.7	4.5	5.6	4.8	4.0	3.6	5.4	2.74
7	4.4	3.12	3.6	6.7	6.6	5.4	5.3	4.6	3.8	3.40	5.0	2.87
8	4.1	3.11	3.5	6.0	6.7	8.5	5.2	4.9	3.8	3.29	4.5	2.80
9	3.9	3.28	3.41	5.4	6.2	7.3	5.2	4.9	3.9	3.24	4.5	3.35
10	3.7	3.43	3.35	5.4	6.0	6.4	5.2	4.6	4.1	3.19	4.3	3.18
11	3.5	3.39	3.29	6.2	5.6	5.8	5.6	4.4	4.8	3.12	4.4	3.06
12	3.46	3.29	3.29	9.4	5.6	5.3	6.3	4.3	4.4	3.09	4.5	2.96
13	3.36	3.23	3.45	9.7	¶11.3	5.3	6.3	4.2	4.0	3.08	4.1	2.82
14	3.30	3.31	3.6	8.5	9.9	6.4	6.8	4.0	3.8	3.6	3.9	2.75
15	3.22	4.4	3.28	7.4	7.7	11.2	7.2	4.0	4.1	3.26	3.8	2.81
16	3.18	6.0	3.15	6.7	6.8	9.1	6.4	3.9	6.2	3.20	3.6	3.7
17	3.13	5.6	5.2	6.1	6.2	7.2	6.0	5.6	8.5	3.12	3.35	4.4
18	3.10	4.9	‡14.0	5.0	6.1	6.4	5.7	5.1	7.6	3.22	3.23	3.8
19	3.6	4.8	11.6	4.8	6.1	6.1	5.4	4.7	7.6	3.7	3.18	3.40
20	6.2	6.2	8.0	5.1	5.8	5.8	5.2	4.4	6.2	3.6	3.14	3.16
21	5.3	6.0	6.7	6.2	5.5	5.6	4.8	4.2	5.8	3.26	3.09	3.06
22	4.8	5.6	6.1	6.7	5.3	‡‡13.4	4.9	4.0	7.2	3.22	3.25	2.98
23	4.4	5.2	5.6	7.2	5.6	15.6	5.4	4.1	6.5	3.48	3.14	2.91
24	4.1	4.9	5.4	6.4	5.8	9.7	5.2	4.0	5.7	3.7	3.02	2.84
25	3.9	4.7	5.3	6.0	7.6	8.1	5.1	4.1	6.1	3.40	3.6	2.79
26	3.8	4.6	6.0	5.6	6.4	7.8	6.0	4.0	6.9	4.3	3.39	2.78
27	3.7	4.5	6.0	5.3	5.8	7.8	6.8	3.8	5.9	3.9	3.32	2.74
28	3.6	4.4	6.2	5.2	5.1	9.2	6.7	3.7	5.3	3.42	3.32	2.73
29	3.6	4.2	8.9	5.0	5.5	9.2	6.2	3.7	4.9	3.17	3.30	2.81
30	3.48	4.2	10.6	5.5	-------	8.4	5.8	3.8	4.6	3.02	3.24	3.5
31	3.43	-------	7.7	7.5	-------	7.4	-------	3.9	-------	2.94	3.16	-------

NOTES.—†Maximum 7.5 feet at 6 p. m. ‡Maximum 15.2 feet at 5 p. m. §Maximum estimated 14.5 feet at 8 p. m. ¶Maximum 12.6 feet at 5 p. m. ‡‡Maximum estimated 19.0 feet at 11 p. m.

OHIO BASIN—STATION NO. 30

TURTLE CREEK NEAR TRAFFORD

DESCRIPTION OF STATION

Location.—At single span, highway bridge at Blackburn Station, near Trafford, Westmoreland County.

Records Available.—Discharge measurements and gage heights from July 28 to September 30, 1914, discharge measurements from October 1, 1914, to January 21, 1916, and discharge measurements and gage heights from January 22 to September 30, 1916. For other records on this creek see Turtle Creek at East Pittsburgh in the 1911 to 1914 reports of the Water Supply Commission, and also under "Miscellaneous Discharge Measurements" in the 1915 report.

Drainage Area.—55 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the downstream side of the bridge and is read twice daily by S. T. Churchfield.

Channel.—Both banks are high and not subject to overflow, and the bed is composed of gravel and hardpan.

Discharge Measurements of Turtle Creek near Trafford, Westmoreland County

(Drainage area, 55 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
4	Jan. 22	Bronson & Wilson	76	1.79	148	0.6 method
5	June 30	Wilson & Weaver	40	1.16	26	Surface method

Daily Mean Gage Heights, in feet, of Turtle Creek near Trafford, Westmoreland County, for the year ending September 30, 1916

Day	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1		2.6	1.6	1.6	1.4	1.3	1.3	1.1	0.88
2		2.0	1.6	1.5	1.4	1.3	1.3	1.1	0.88
3		1.8	1.6	1.5	1.4	2.9	1.2	0.88	0.88
4		1.7	1.5	1.6	1.4	2.8	1.2	0.88	0.88
5		1.6	1.4	1.6	1.4	2.4	1.2	0.93	0.88
6		1.5	1.3	1.6	1.4	1.9	1.1	0.98	0.78
7		1.8	3.2	1.5	1.4	1.7	1.1	0.98	0.78
8		1.6	2.3	1.5	1.4	1.6	0.98	0.98	0.88
9		1.6	1.8	1.5	1.3	1.5	0.98	0.98	0.88
10		1.5	1.7	1.5	1.3	1.4	0.98	0.88	0.88
11		1.4	1.6	1.5	1.3	1.4	0.98	0.88	0.88
12		1.6	1.5	1.4	1.3	1.4	0.98	0.88	0.78
13		1.5	1.5	1.5	1.2	1.3	0.98	0.88	0.78
14		1.8	1.5	1.8	1.2	1.2	0.98	0.88	0.78
15		1.6	1.6	1.8	1.2	1.5	0.98	0.88	0.98
16		1.6	1.6	1.6	1.2	2.0	1.0	0.88	0.98
17		1.5	1.5	1.7	1.2	1.8	1.1	0.78	0.88
18		1.6	1.5	1.6	1.2	1.7	1.1	0.78	0.88
19		1.6	1.4	1.6	1.1	1.8	1.1	0.78	0.88
20		1.5	1.3	1.4	1.1	1.7	0.98	0.78	0.88
21		1.5	1.5	1.4	1.1	1.9	0.98	0.78	0.88
22	**1.8	1.7	†3.9	1.5	1.1	1.9	0.98	0.78	0.88
23	1.7	1.8	2.6	1.5	1.2	1.8	0.98	0.68	0.98
24	1.6	1.9	2.1	1.5	1.2	1.8	0.98	0.68	0.98
25	1.5	2.9	1.8	1.5	1.1	1.7	0.98	0.68	0.98
26	1.5	2.2	2.0	1.5	1.1	1.6	0.98	0.68	0.98
27	1.4	1.9	2.2	1.5	1.1	1.5	0.98	0.68	0.98
28	1.4	1.7	2.6	1.5	1.1	1.5	0.98	0.88	0.98
29	1.4	1.6	2.1	1.4	1.2	1.4	0.98	0.88	0.98
30	1.8		1.9	1.4	1.2	1.3	0.98	0.88	0.98
31	2.0		1.7		1.3		0.98	0.88	

NOTES.—**Gage heights previous to January 22, 1916, unreliable and not used. †Maximum 5.0 feet at 5:15 p. m.

OHIO BASIN—STATION NO. 31

BRUSH CREEK NEAR TRAFFORD

DESCRIPTION OF STATION

Location.—At single span, steel, through truss, highway bridge between Cavettsville and Trafford, Westmoreland County.

Records Available.—Discharge measurements and gage heights from July 14, 1914, to September 30, 1916.

Drainage Area.—56 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the downstream side of the bridge and is read twice daily by Paul Stoy.

Channel.—Both banks overflow at gage height 8 feet, and the bed is composed of gravel and hardpan.

Discharge Measurements of Brush Creek near Trafford, Westmoreland County
(Drainage area, 56 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
5	Jan. 21	Wilson & Bronson	62	2.58	98	0.6 method
6	June 30	Wilson & Weaver	50	2.15	35	0.6 method

Daily Mean Gage Heights, in feet, of Brush Creek near Trafford, Westmoreland County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	2.2	2.0	2.1	3.0	3.0	2.6	2.7	2.3	2.5	2.2	2.3	1.87
2	2.3	1.98	2.1	3.6	3.2	2.5	2.8	2.3	2.4	2.2	2.0	1.86
3	2.3	2.0	2.1	3.1	3.1	2.5	2.7	2.3	5.0	2.2	1.98	1.85
4	2.2	2.0	2.1	3.0	2.9	2.5	2.7	2.3	2.9	2.2	1.99	1.85
5	2.5	2.0	2.1	3.0	2.8	2.4	2.6	2.3	2.5	2.1	2.0	1.85
6	2.4	2.0	2.0	3.0	2.7	2.5	2.6	2.3	2.4	2.1	2.0	1.85
7	2.3	1.98	2.0	2.9	2.7	3.3	2.5	2.3	2.4	2.0	1.98	1.88
8	2.2	2.0	2.0	2.9	2.8	2.9	2.5	††2.3	2.4	2.0	2.0	1.82
9	2.1	2.0	2.1	2.8	2.7	2.8	2.7	††2.3	2.3	1.99	2.0	1.86
10	2.0	2.0	2.0	2.8	2.6	2.7	2.5	††2.3	2.3	2.0	1.96	1.88
11	2.0	2.0	2.1	2.9	2.6	2.5	2.5	††2.3	2.3	1.99	1.98	1.85
12	2.0	2.0	2.1	3.5	2.5	2.5	2.5	††2.3	2.3	1.98	1.96	1.82
13	1.98	2.0	2.1	3.3	2.6	2.5	2.5	††2.2	2.2	2.0	1.98	1.80
14	1.99	2.1	2.1	3.2	2.6	2.5	2.8	††2.2	2.2	2.1	1.98	1.80
15	2.0	2.4	2.1	3.1	2.5	2.5	2.6	††2.2	2.6	2.0	1.96	2.1
16	2.0	2.4	2.1	3.1	2.5	2.5	2.5	††2.2	2.5	2.0	1.96	1.90
17	1.98	2.4	††3.1	2.8	2.5	2.5	2.5	††2.2	2.6	2.0	1.96	1.83
18	2.0	2.3	††3.8	2.8	2.5	2.5	2.5	††2.1	2.5	2.0	1.94	1.82
19	2.7	2.6	††3.0	2.7	2.5	2.5	2.4	††2.1	3.0	2.0	1.93	1.82
20	2.3	2.5	2.8	2.7	2.5	2.6	2.4	††2.1	2.7	1.99	1.92	1.82
21	2.2	2.3	2.7	2.7	2.5	5.4	2.4	††2.1	2.8	1.96	1.92	1.82
22	2.2	2.3	2.6	3.0	2.5	3.4	2.4	2.3	2.6	1.94	1.91	1.92
23	2.1	2.2	2.5	2.8	2.6	3.1	2.5	2.2	3.5	1.93	1.90	1.92
24	2.2	2.2	2.5	2.6	2.9	3.1	2.5	2.2	2.4	2.0	1.88	1.88
25	2.0	2.2	2.4	2.5	3.4	3.0	2.5	2.1	2.4	2.0	1.88	1.85
26	2.0	2.2	2.5	2.7	3.5	3.0	2.5	2.1	2.4	2.0	1.90	1.85
27	1.99	2.2	2.5	2.6	3.4	3.3	2.5	2.1	2.3	1.96	1.94	1.85
28	1.98	2.2	2.5	2.5	3.3	3.2	2.4	2.3	2.3	1.94	1.98	††1.85
29	2.0	2.2	3.8	2.5	2.6	3.1	2.4	2.2	2.3	1.93	1.94	††1.85
30	2.0	2.1	3.4	2.4	-------	3.0	2.4	3.1	2.2	1.93	1.91	††1.85
31	2.0	-------	3.3	3.0	-------	2.8	-------	2.7	-------	1.92	1.88	-------

NOTE—††Estimated.

OHIO BASIN—STATION NO. 32

CHARTIERS CREEK AT CARNEGIE

DESCRIPTION OF STATION

Location.—At two single span, steel, through truss, railroad bridges of the P. C. C. & St. L. Railroad, Chartiers Branch, known as Bridge No. 1 and Freight House Bridge, Carnegie, Allegheny County.

Records Available.—Discharge measurements and gage heights from June 5, 1915, to September 30, 1916.

Drainage Area.—260 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the upstream side of the Freight House Bridge and is read twice daily by Richard Musiol.

Channel.—Both banks are high and not subject to overflow, and the bed is soft and sewage covered in pools, but at the riffles is rocky and slag covered.

Remarks.—This station is maintained in co-operation with the U. S. Engineer Office in Pittsburgh.

Discharge Measurement of Chartiers Creek at Carnegie, Allegheny County

(Drainage area, 260 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
3	July 3	Wilson & Weaver	152	2.56	228	0.6 method

Daily Mean Gage Heights, in feet, of Chartiers Creek at Carnegie, Allegheny County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	2.6	1.48	1.79	4.0	5.4	3.1	3.5	2.8	1.98	1.88	1.62	1.45
2	3.1	1.42	1.87	5.9	4.0	3.2	3.8	2.6	1.88	1.84	1.50	1.44
3	2.5	1.38	1.78	4.2	3.6	2.9	3.5	2.6	4.0	2.7	1.52	1.38
4	2.0	1.40	1.78	3.6	3.2	2.7	3.5	2.8	2.9	2.1	2.0	1.34
5	3.4	1.44	1.75	3.5	3.3	2.8	3.3	2.6	2.3	1.88	2.1	1.30
6	2.8	1.42	1.69	3.8	3.6	2.8	3.2	2.5	2.1	1.78	§4.7	1.36
7	2.3	1.54	1.73	3.3	3.7	6.3	3.0	2.6	2.3	1.74	2.4	1.32
8	2.0	1.76	1.73	3.0	2.9	4.8	3.1	2.5	2.6	1.70	2.3	1.48
9	1.91	1.62	1.74	2.7	3.2	3.7	3.2	2.3	2.3	1.78	2.3	1.48
10	1.79	1.50	1.67	3.0	2.9	3.5	4.2	2.2	2.3	1.70	1.94	1.43
11	1.74	1.47	1.55	3.7	2.8	3.1	3.8	2.2	2.2	1.62	1.80	1.38
12	1.67	1.56	1.71	6.4	3.2	3.1	3.5	2.2	2.0	1.56	2.0	1.32
13	1.66	1.62	1.73	6.0	4.2	3.0	3.3	2.1	1.95	1.58	1.72	1.27
14	1.64	1.70	1.67	4.4	3.3	3.0	4.0	2.1	1.88	1.68	1.62	1.28
15	1.72	3.1	1.59	3.5	3.2	3.3	3.6	2.2	1.94	1.66	1.56	1.31
16	1.70	3.0	1.62	3.4	3.2	3.1	3.3	2.2	3.2	2.2	1.55	1.34
17	1.62	2.5	2.6	2.8	3.1	2.9	3.3	2.1	2.4	2.2	1.54	1.33
18	1.58	2.2	7.0	2.8	3.3	2.7	3.0	2.0	2.4	2.1	1.52	1.30
19	1.68	3.0	4.2	2.9	3.5	2.9	2.9	1.94	2.4	1.87	1.52	1.25
20	2.0	3.1	3.4	2.8	3.3	2.8	2.9	1.94	2.9	1.67	1.49	1.26
21	1.70	2.8	3.0	3.2	3.1	2.9	2.8	1.90	2.9	1.61	1.48	1.24
22	1.60	2.5	2.7	3.6	3.0	†9.6	2.9	1.91	2.9	2.4	1.45	1.44
23	1.54	2.3	2.6	3.7	3.6	5.9	2.9	2.0	2.5	1.98	1.46	1.36
24	1.53	2.3	2.6	3.2	3.5	4.6	2.8	1.90	2.3	1.80	1.42	1.32
25	1.50	2.1	2.6	3.0	6.5	4.3	2.7	1.84	3.3	1.72	1.42	1.32
26	1.50	2.1	3.1	2.9	4.5	4.2	2.6	1.78	2.4	1.66	1.74	1.24
27	1.50	2.1	2.8	2.8	3.9	4.4	3.3	1.76	2.2	1.63	1.95	1.27
28	1.49	2.0	3.8	2.8	3.6	4.5	3.4	1.89	2.0	1.59	1.82	1.24
29	1.53	1.98	‡7.2	2.7	3.4	4.6	3.1	2.1	2.0	1.53	1.96	1.46
30	1.54	1.90	6.1	4.1	-------	4.0	2.9	2.2	1.92	1.49	1.62	1.46
31	1.52	-------	4.3	4.1	-------	3.7	-------	2.5	-------	1.52	1.50	-------

NOTES—†Maximum 10.0 feet at 4 p. m. ‡Maximum 11.1 feet at 4 p. m. §Maximum 6.0 feet at 8 a. m.

OHIO BASIN—STATION NO. 33

NESHANNOCK CREEK AT EAST BROOK STATION

DESCRIPTION OF STATION

Location.—At single span, wood and steel, through truss, highway bridge at East Brook Station, Lawrence County.

Records Available.—Discharge measurements and gage heights from January 19 to September 30, 1914, discharge measurements from October 1, 1914, to September 30, 1915, and discharge measurement and gage heights from October 1, 1915, to September 30, 1916.

Drainage Area.—235 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the upstream side of the bridge and is read twice daily by F. C. Reynolds.

Channel.—Both banks are high and not subject to overflow, and the bed is composed of rock and gravel.

Discharge Measurement of Neshannock Creek at East Brook Station, Lawrence County

(Drainage area, 235 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
4	1916 June 28	Wilson & Weaver	Sq. ft. 95	Feet 1.52	Sec.-ft. 93	0.6 method

Daily Mean Gage Heights, in feet, of Neshannock Creek at East Brook Station, Lawrence County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	1.7	1.27	1.7	2.8	3.0	1.7	2.4	2.0	1.45	1.47	0.98	0.92
2	1.9	1.23	1.6	6.6	2.4	1.7	2.3	1.9	1.44	1.44	0.97	0.95
3	1.8	1.21	1.5	4.1	2.1	1.8	2.2	1.9	2.8	1.44	0.94	‖1.03
4	1.7	1.21	1.5	2.9	1.8	1.7	2.3	2.6	2.2	1.41	0.88	1.11
5	1.8	1.24	1.5	2.8	1.9	1.8	2.1	2.3	2.2	1.37	1.14	1.14
6	1.9	1.25	1.5	3.0	1.8	1.9	2.0	2.2	1.7	1.28	††1.8	1.25
7	1.7	‖1.26	1.48	2.4	1.8	4.3	1.9	2.1	1.8	1.26	1.32	1.30
8	1.48	1.28	1.46	2.0	1.7	4.6	1.8	2.0	2.2	1.20	1.26	1.16
9	1.41	1.21	1.48	1.9	1.7	3.3	††2.1	1.9	2.0	1.19	1.5	1.3
10	‖1.38	1.11	1.5	2.0	1.8	2.7	2.3	1.8	1.9	1.48	1.39	1.32
11	1.34	1.11	1.5	2.5	1.8	2.5	2.3	1.8	††2.3	1.39	1.09	1.14
12	1.22	1.23	1.44	3.0	1.8	††2.3	2.4	1.5	1.9	1.20	1.10	1.08
13	1.26	1.23	1.5	4.4	1.8	2.7	2.2	1.5	1.8	1.11	1.13	0.92
14	1.23	††1.40	1.48	3.0	1.6	3.3	3.1	‖1.5	1.6	1.09	1.08	1.00
15	1.24	1.6	2.3	2.4	1.6	2.3	2.9	1.5	1.7	1.10	0.95	1.14
16	1.6	1.8	2.2	2.2	1.6	2.4	2.4	1.6	1.9	1.17	1.06	1.10
17	1.46	1.7	2.8	1.9	1.6	2.2	2.7	1.7	1.8	1.5	1.00	0.90
18	1.43	1.48	5.0	1.9	1.7	2.1	2.6	1.6	1.5	1.6	1.00	1.04
19	1.48	1.8	3.6	2.0	1.6	2.0	2.3	1.6	2.2	1.46	1.03	0.98
20	1.49	2.0	2.8	2.0	1.6	1.9	2.7	1.5	2.4	1.38	‖1.04	0.98
21	1.40	2.1	2.3	2.5	1.5	2.0	3.3	1.7	2.1	1.30	1.05	0.95
22	1.35	2.1	2.1	3.5	1.6	3.1	3.8	2.7	2.0	1.28	1.04	0.98
23	1.26	1.8	2.2	3.0	2.0	3.5	3.4	2.7	1.7	‖1.26	1.08	1.01
24	‖1.25	1.7	2.4	2.5	2.3	3.4	3.0	2.2	1.6	1.24	1.10	1.05
25	1.24	1.7	2.7	2.4	2.4	4.4	2.7	1.8	††1.8	1.29	1.09	1.03
26	1.24	1.6	3.2	2.4	2.2	6.2	2.5	1.7	1.7	1.20	1.04	1.00
27	1.22	1.6	2.8	2.3	2.0	5.6	3.0	1.7	1.5	1.22	1.06	1.00
28	1.25	1.8	2.8	2.3	2.0	4.2	2.6	1.7	1.5	1.06	1.20	1.02
29	1.32	1.8	2.7	2.2	2.0	3.5	2.3	2.0	1.42	1.04	1.04	1.03
30	1.30	1.7	2.7	2.8	-------	3.0	2.2	1.7	1.48	‖1.04	0.98	1.20
31	‖1.28	-------	2.4	2.8	-------	2.6	-------	1.6	-------	1.04	0.94	-------

NOTES—‖Interpolated. ††Estimated.

OHIO BASIN—STATION NO. 34

SLIPPERY ROCK CREEK AT WURTEMBURG

DESCRIPTION OF STATION

Location.—At three span, steel, deck truss, highway bridge crossing Slippery Rock Creek at the north end of Wurtemberg, Lawrence County.

Records Available.—Discharge complete from January 1, 1912, to September 30, 1916.

Drainage Area.—400 square miles.

Gage.—A standard chain gage, whose elevation of zero is 817.63 feet above mean sea level, is located on the upstream side of the bridge and is read twice daily by Jacob H. Boots.

Channel.—Both banks are high and do not overflow, and the bed is composed of gravel.

Discharge Measurement of Slippery Rock Creek at Wurtemburg, Lawrence County

(Drainage area, 400 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
23	June 29	Wilson & Weaver,	121	2.51	181	0.6 method

Daily Mean Gage Heights, in feet, of Slippery Rock Creek at Wurtemburg, Lawrence County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	2.51	2.29	2.79	3.8	4.5	3.3	3.7	3.2	2.70	2.42	2.13	2.02
2	3.7	2.20	2.67	6.5	4.2	3.1	3.7	3.1	2.57	2.44	2.16	2.13
3	3.6	2.29	2.75	6.1	3.7	3.1	3.5	3.1	4.7	2.40	2.15	2.11
4	3.2	2.27	2.73	4.6	3.4	2.95	3.4	3.5	4.6	2.40	2.08	2.14
5	3.1	2.21	2.69	4.3	3.5	3.0	3.3	3.4	3.6	2.40	2.18	2.14
6	3.3	2.25	2.75	4.8	3.2	2.89	3.2	3.2	3.1	2.36	2.46	2.73
7	3.0	2.23	2.58	4.1	3.1	4.1	3.0	3.2	3.0	2.28	2.38	2.35
8	2.81	2.26	2.55	3.5	3.1	5.3	3.0	3.1	3.5	2.28	2.36	2.30
9	2.72	2.21	2.75	3.2	3.2	4.8	3.1	2.95	3.2	2.22	2.48	2.20
10	2.59	2.35	2.62	3.3	3.2	4.1	3.3	2.86	3.1	2.58	2.38	2.16
11	2.56	2.23	2.65	3.9	3.0	3.7	3.8	2.94	3.5	2.76	2.32	2.10
12	2.51	2.31	2.58	4.0	3.0	3.5	3.7	2.93	3.3	2.42	2.25	2.12
13	2.45	2.29	2.71	5.1	3.1	3.4	3.5	2.77	2.94	2.30	2.28	2.12
14	2.47	2.33	2.59	4.6	3.1	4.3	4.2	2.72	2.76	2.62	2.20	2.10
15	2.42	2.50	2.53	3.6	2.97	3.9	4.6	2.77	2.70	2.64	2.13	2.12
16	2.43	2.93	2.67	3.6	2.84	3.6	3.9	2.76	3.0	2.45	2.14	2.12
17	2.41	2.79	3.2	3.3	2.78	3.6	3.9	2.82	3.6	2.70	2.09	2.12
18	2.39	2.61	5.9	3.4	2.86	3.3	3.9	2.82	3.3	2.78	2.10	2.16
19	2.45	2.89	5.6	3.3	2.90	3.3	3.5	2.72	3.3	2.68	2.08	2.06
20	2.47	3.6	4.5	3.2	2.92	3.3	3.5	2.68	4.0	2.45	2.08	2.08
21	2.43	3.4	4.0	3.7	2.88	3.1	3.7	2.64	3.6	2.40	2.08	2.07
22	2.43	3.4	3.5	4.7	2.88	4.0	4.5	2.58	3.7	2.32	2.06	2.06
23	2.34	3.1	3.4	4.5	3.3	4.8	4.4	3.6	3.3	2.28	2.14	2.06
24	2.37	2.95	3.6	3.9	3.7	4.8	4.0	3.5	3.0	2.24	2.16	2.05
25	2.31	2.86	3.8	3.6	4.0	5.1	3.7	3.0	2.89	2.20	2.08	2.04
26	2.25	2.81	4.4	3.5	3.8	6.3	3.6	2.81	2.92	2.16	2.06	2.03
27	2.29	2.80	4.0	3.5	3.5	6.9	3.7	2.72	2.74	2.16	2.09	2.04
28	2.27	3.1	4.1	3.4	3.3	6.1	4.0	2.74	2.62	2.16	2.11	2.10
29	2.25	2.99	4.3	3.3	3.4	5.1	3.7	3.2	2.53	2.12	2.15	2.12
30	2.29	2.94	4.2	3.7	-------	4.4	3.4	3.1	2.50	2.10	2.18	2.04
31	2.25	-------	4.0	4.1	-------	4.0	-------	2.84	-------	2.12	2.08	-------

Daily discharge, in Second-feet, of Slippery Rock Creek at Wurtemburg, Lawrence County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	196	77	383	1,240	2,080	770	1,140	690	320	142	36	22
2	1,140	50	299	5,980	1,700	610	1,140	610	232	154	42	42
3	1,040	77	355	5,010	1,140	610	950	610	2,360	130	40	32
4	690	71	341	2,220	860	495	860	950	2,220	130	28	38
5	610	53	313	1,820	950	530	770	860	1,040	130	46	38
6	770	65	355	2,510	690	453	690	690	610	110	166	341
7	530	59	238	1,580	610	1,580	530	690	530	74	120	105
8	397	68	220	950	610	3,350	530	610	950	74	110	80
9	334	53	355	690	690	2,510	610	495	690	56	178	50
10	244	105	264	770	690	1,580	770	432	610	238	120	42
11	226	59	285	1,350	530	1,140	1,240	488	950	362	90	30
12	196	85	238	1,460	530	950	1,140	481	770	148	65	34
13	160	77	327	3,000	610	860	950	369	488	80	74	34
14	172	95	244	2,220	610	1,820	1,700	334	362	264	50	30
15	142	190	208	1,040	509	1,350	2,220	369	320	278	36	34
16	148	481	299	1,040	418	1,040	1,350	362	530	160	38	34
17	136	383	690	770	376	1,040	1,350	404	1,040	320	29	34
18	125	257	4,550	860	432	770	1,350	404	770	376	30	42
19	160	453	3,910	770	460	770	950	334	770	306	28	26
20	172	1,040	2,080	690	474	770	950	306	1,460	160	28	28
21	148	830	1,460	1,140	446	610	1,140	278	1,040	130	28	27
22	148	860	950	2,360	446	1,460	2,080	238	1,140	90	26	26
23	100	610	860	2,080	770	2,510	1,950	1,040	770	74	38	26
24	115	495	1,040	1,350	1,140	2,510	1,460	950	530	62	42	25
25	85	432	1,240	1,040	1,460	3,000	1,140	530	453	50	28	24
26	65	397	1,950	950	1,240	5,490	1,040	397	474	42	26	26
27	77	390	1,460	950	950	7,050	1,140	334	348	42	29	24
28	71	610	1,580	860	770	5,010	1,460	348	264	42	32	30
29	65	523	1,820	770	860	3,030	1,140	690	208	34	40	34
30	77	488	1,700	1,140	-------	1,950	860	610	196	30	46	24
31	65	-------	1,460	1,580	-------	1,460	-------	418	-------	34	28	-------

Estimated Monthly Discharge of Slippery Rock Creek at Wurtemburg, Lawrence County

(Drainage area, 400 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	1,140	65	278	0.70	0.81
November	1,040	50	315	0.79	0.88
December	4,550	208	1,020	2.55	2.94
1916					
January	5,980	690	1,620	4.05	4.67
February	2,080	376	795	1.99	2.15
March	7,050	453	1,840	4.60	5.30
April	2,220	530	1,150	2.88	3.21
May	1,040	238	526	1.32	1.52
June	2,360	190	748	1.87	2.09
July	376	30	139	0.35	0.40
August	166	26	55	0.14	0.16
September	341	22	46	0.12	0.13
The year	7,050	22	712	1.78	24.26

OHIO BASIN—STATION NO. 35

CONNOQUENESSING CREEK AT HAZEN (CELIA)

DESCRIPTION OF STATION

Location.—At single span, steel, through truss, highway bridge at Hazen, or Celia, Beaver County.

Records Available.—Discharge measurements and gage heights from June 1, 1915, to September 30, 1916.

Drainage Area.—355 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the downstream side of the bridge and is read twice daily by Ethan H. Thomas.

Channel.—The right bank is low and overflows at high stages; the left bank is high and precipitous and overflows slightly in extreme stages, and the bed is composed of rock.

Remarks.—This station is maintained in co-operation with the U. S. Engineer Office in Pittsburgh.

Discharge Measurement of Connoquenessing Creek at Hazen (Celia), Beaver County

(Drainage area, 355 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
4	1916 June 29	Wilson & Weaver	Sq. ft. 110	Feet 2.13	Sec.-ft. 240	Wading 300 ft. below bridge.

Daily Mean Gage Heights, in feet, of Connoquenessing Creek at Hazen (Celia), Beaver County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	1.87	1.51	1.89	3.8	5.2	5.5	3.1	2.5	1.86	1.97	1.63	1.44
2	3.1	1.49	1.89	‡8.5	4.1	5.7	3.1	2.4	1.76	1.89	1.49	1.42
3	2.7	1.49	1.91	5.5	3.5	5.0	2.8	2.4	3.2	1.98	1.40	1.38
4	2.4	1.49	1.94	3.8	3.0	4.8	2.8	3.1	2.8	1.94	1.36	1.38
5	2.8	1.48	1.85	3.5	2.9	4.8	2.7	2.7	2.4	1.83	2.1	1.34
6	2.7	1.49	1.79	3.6	2.8	4.4	2.6	2.6	2.2	1.74	3.0	1.31
7	2.4	1.51	1.79	3.0	2.7	7.1	2.4	2.6	2.2	1.67	2.1	1.54
8	2.3	1.49	1.79	2.7	*2.8	5.5	2.4	2.5	2.4	1.62	1.84	1.50
9	2.2	1.49	1.79	2.5	4.7	3.8	2.5	2.4	2.2	1.62	2.8	1.52
10	2.0	1.48	1.80	2.6	4.5	3.4	2.8	2.3	2.3	2.1	2.1	1.47
11	1.97	1.47	1.89	3.2	3.7	2.9	2.9	2.3	3.1	2.0	1.96	1.38
12	1.90	1.49	2.1	3.5	2.8	2.7	2.8	2.3	2.9	1.74	2.0	1.30
13	1.84	1.61	2.0	5.0	4.6	2.7	2.7	2.1	2.5	1.62	1.88	1.28
14	1.79	1.65	*2.6	4.2	*4.9	3.5	¶3.8	2.1	2.4	1.84	1.73	1.48
15	1.78	1.77	2.1	3.8	4.8	3.0	3.8	2.3	2.3	1.76	1.56	1.47
16	1.76	2.0	2.2	3.1	4.6	2.9	3.4	2.2	4.0	1.78	1.54	1.42
17	1.71	1.80	2.5	2.7	4.4	2.7	3.1	2.3	3.0	1.94	1.53	1.46
18	1.69	1.70	7.1	*4.3	4.3	*3.1	3.0	2.1	2.7	1.97	1.51	1.36
19	1.71	1.94	5.0	4.2	4.1	3.8	2.7	2.1	2.9	1.86	1.48	1.28
20	1.73	2.5	3.7	4.0	4.0	2.8	2.6	2.0	3.4	1.70	1.46	1.28
21	1.73	2.3	3.1	4.6	3.8	2.8	2.6	1.93	3.4	1.62	1.45	1.28
22	1.66	2.3	2.8	5.1	3.6	§5.4	3.0	1.90	3.6	1.61	1.42	1.28
23	1.63	2.2	2.7	3.6	4.2	5.9	3.1	2.5	3.0	1.56	1.52	1.30
24	1.59	2.1	2.9	3.2	4.8	4.7	2.9	2.5	2.7	1.54	1.44	1.32
25	1.59	2.0	2.9	2.9	8.2	5.5	2.8	2.2	3.0	1.48	1.40	1.30
26	1.57	1.98	3.8	2.8	6.1	7.7	2.7	2.1	2.6	1.48	1.38	1.27
27	1.57	1.97	3.3	2.8	4.2	7.2	3.0	2.0	2.3	1.42	1.70	1.24
28	1.55	2.0	3.8	2.7	6.5	6.0	2.9	2.0	2.2	1.38	1.82	1.23
29	1.55	2.0	†5.7	2.6	6.0	4.7	2.7	2.1	2.1	1.37	1.74	1.27
30	1.53	2.0	5.5	3.6	------	3.8	2.6	2.0	2.1	1.34	1.62	1.31
31	1.54	-------	4.0	4.3	-------	3.3	-------	1.96	-------	1.32	1.50	-------

NOTES—*Creek frozen December 14 to 16, 1915; January 18 to 21; February 8 to 11; February 14 to March 7 and March 18 and 19, 1916, inclusive. †Maximum estimated 8.5 feet at 8 p. m. ‡Maximum 9.1 feet at 7:30 a. m. §Maximum estimated 8.3 feet at 10 p. m. ¶Maximum 4.9 feet at 6 p. m.

OHIO BASIN—STATION NO. 36

RACCOON CREEK AT MOFFATT'S MILL, BEAVER COUNTY

DESCRIPTION OF STATION

Location.—At dismantled single span, steel, through truss, highway bridge, 500 feet below Moffatt's Mill and 4½ miles above the mouth of the creek.

Records Available.—Discharge measurements and gage heights from May 26, 1915, to September 30, 1916.

Drainage Area.—178 square miles.

Gage.—A standard chain gage, whose elevation of zero is arbitrary, is located on the downstream side of the bridge and is read twice daily by Alonzo L. McMahon.

Channel.—The right bank is high and precipitous and does not overflow; the left bank overflows above and below the bridge, and the bed is rocky.

Remarks.—This station is maintained in co-operation with the U. S. Engineer Office in Pittsburgh.

Discharge Measurement of Raccoon Creek at Moffatt's Mill, Beaver County

(Drainage area, 178 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
3	June 28	Wilson & Weaver	194	2.36	66	0.6 method

Daily Mean Gage Heights, in feet, of Raccoon Creek at Moffatt's Mill, Beaver County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	2.20	1.98	2.30	3.5	4.0	2.7	3.0	2.6	2.16	2.26	1.97	1.89
2	2.6	1.98	2.30	5.2	3.5	2.8	3.0	2.6	2.12	2.25	1.96	1.83
3	2.9	1.94	2.28	4.4	3.2	2.8	2.9	2.8	4.2	2.7	1.97	1.78
4	2.36	1.95	2.26	3.2	2.9	2.5	2.8	3.3	3.2	2.42	1.99	1.74
5	2.28	1.94	2.24	3.2	3.0	2.5	2.8	3.2	3.0	2.30	1.96	1.71
6	2.28	1.92	2.22	3.1	3.4	2.6	2.7	3.0	2.9	2.36	2.12	1.69
7	2.28	1.94	2.20	2.8	2.7	4.4	2.6	2.8	3.0	2.31	2.11	1.67
8	2.26	1.93	2.18	2.8	2.6	4.2	2.6	2.7	3.0	2.27	2.11	1.69
9	2.21	1.94	2.18	2.7	2.7	3.5	2.7	2.6	2.8	2.21	2.08	1.69
10	2.18	1.92	2.14	2.7	2.8	3.2	3.3	2.5	2.9	2.13	2.14	1.71
11	2.18	1.93	2.11	3.2	2.7	2.9	3.0	2.45	2.8	2.09	2.11	1.71
12	2.14	2.03	*2.02	4.0	2.7	2.7	2.9	2.43	2.7	2.08	2.07	1.81
13	2.10	2.22	2.13	4.4	2.7	2.8	2.8	2.42	2.48	2.03	2.02	1.85
14	2.07	2.22	2.10	3.5	2.18	2.8	3.5	2.40	2.32	2.20	2.02	1.91
15	2.5	2.30	2.09	3.3	3.1	2.7	3.1	2.6	2.47	2.15	1.99	1.82
16	2.7	2.8	2.20	3.1	3.1	2.8	2.9	2.41	2.6	2.19	1.95	1.79
17	2.30	2.7	2.30	2.6	2.8	2.7	2.8	2.39	2.7	2.6	1.90	1.75
18	2.28	2.7	4.7	2.6	2.7	2.48	2.8	2.31	2.6	2.6	1.88	1.75
19	2.32	2.5	3.5	2.8	2.8	2.8	2.7	2.30	2.6	2.5	1.89	1.76
20	2.29	3.1	3.1	2.7	2.9	2.49	2.6	2.27	3.1	2.41	1.77	1.78
21	2.14	2.9	3.0	2.8	2.8	2.8	2.6	2.23	3.1	2.37	1.70	1.79
22	2.06	2.8	2.7	2.9	2.8	6.2	2.7	2.25	3.3	2.28	1.69	1.78
23	2.04	2.6	2.5	3.1	2.9	4.4	2.8	2.41	2.8	2.19	1.67	1.77
24	2.03	2.6	2.7	2.7	3.0	3.9	2.8	2.35	2.6	2.19	1.66	1.75
25	2.02	2.5	2.7	2.6	4.4	3.9	2.7	2.23	2.7	2.15	1.65	1.75
26	2.02	2.40	3.3	2.6	3.5	4.0	2.7	2.15	2.6	2.10	1.69	1.73
27	1.97	2.38	3.0	2.6	3.2	4.0	2.8	2.24	2.40	2.09	1.91	1.73
28	2.01	2.32	3.5	2.5	2.9	3.7	2.9	2.20	2.34	2.07	2.01	1.73
29	2.04	2.33	5.9	2.6	2.9	3.6	2.8	2.17	2.31	2.03	2.02	1.75
30	2.02	2.33	5.3	3.6	-------	3.4	2.7	2.21	2.28	2.01	1.98	1.75
31	2.00	-------	3.7	3.8	-------	3.2	-------	2.21	-------	2.00	1.95	-------

NOTE—*Creek frozen December 12 to 17, 1915, inclusive.

Records at the following seven stations have been compiled from data furnished by the engineer in charge of the Pymatuning Reservoir Project:

OHIO BASIN—STATION NO. 37

SHENANGO RIVER AT TURNERVILLE

DESCRIPTION OF STATION

Location.—At a weir on the upstream side of the single span, through truss, highway bridge at Turnerville, Crawford County.

Records Available.—Discharge complete from February 1, 1912, to September 30, 1916.

Drainage Area.—152 square miles.

Gage.—A Bristol recording gage, whose elevation of zero is 975.62 feet above mean sea level, is located on the east abutment of the bridge.

Discharge Measurements of Shenango River at Turnerville, Crawford County

(Drainage area, 152 square miles)

No.	Date	Hydrographer	Head on Weir	Dis.	Remarks
	1915		Feet	Sec.-ft.	
39	Nov. 27	Ferris	1.120	298	Submergence Test. 44.64%
40	Nov. 29	Ferris	1.220	324	Submergence Test. 48.36%
	1916				
41	Mar. 24	Ferris & McElrath	0.980	197	Submergence Test. 33.7 %
42	Mar. 25	Ferris & McElrath	1.398	204	Submergence Test. 91.5 %
43	Mar. 25	Ferris & McElrath	1.578	208	Submergence Test. 93.8 %
44	Mar. 25	Haslam & Ferris	1.615	218	Submergence Test. 95.9 %
45	Mar. 25	Ferris & McElrath	1.820	214	Submergence Test. 97.3 %
46	Mar. 26	Ferris & McElrath	4.820	1,029	Submergence Test. 98.5 %
47	Mar. 28	Ferris	8.100	4,196	Includes 1,043 second-feet overflow
48	Mar. 28	Ferris	8.150	4,149	Includes 1,075 second-feet overflow
49	Mar. 29	Ferris	7.460	3,444	Includes 647 second-feet overflow
50	Mar. 30	McElrath	5.615	1,704	Includes 20 second-feet overflow
51	Mar. 31	McElrath	4.240	1,107	
52	April 5	Ferris	1.130	281	
53	July 26	McElrath	0.095	8.7	

NOTE—All measurements taken by multiple point method.

Overflow across Road at Turnerville

No.	Date	Hydrographer	Head on Weir	Dis.	Remarks
	Mar. 27	Haslam & Ferris	6.18	119	Overflow measurement
	Mar. 29	Ferris	7.36	591	Overflow measurement
	April 23	Ferris	5.28	1.15	Overflow measurement

Daily Mean Heads on Weir, in feet, of Shenango River at Turnerville, Crawford County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	0.37	0.23	1.20	1.36	1.44	0.79	2.83	0.84	1.03	0.26	0.06	0.05
2	0.59	0.22	1.07	4.55	1.57	0.76	2.17	0.76	0.82	0.22	0.05	0.05
3	0.57	0.22	0.96	5.32	1.34	0.73	1.68	0.72	0.81	0.21	0.05	0.05
4	0.49	0.22	0.85	5.58	1.05	0.69	1.39	0.77	0.70	0.28	0.05	0.05
5	0.54	0.22	0.79	4.48	0.84	0.60	1.14	0.77	0.60	0.28	0.05	0.05
6	0.54	0.21	0.74	4.26	0.64	0.54	0.95	0.78	0.60	0.23	0.05	0.07
7	0.49	0.22	0.71	4.20	0.57	1.04	0.85	0.74	0.58	0.14	0.06	0.13
8	0.44	0.22	0.67	3.32	0.55	2.16	0.78	0.67	0.56	0.12	0.07	0.15
9	0.39	0.22	0.65	2.23	0.54	1.86	0.76	0.64	0.52	0.13	0.07	0.17
10	0.35	0.20	0.61	1.53	0.47	1.92	0.78	0.59	0.64	0.12	0.06	0.20
11	0.31	0.20	0.53	1.22	0.46	2.17	0.77	0.55	0.88	0.14	0.07	0.17
12	0.33	0.21	0.50	1.16	0.45	2.00	0.77	0.48	0.88	0.14	0.06	0.12
13	0.35	0.23	0.53	1.74	0.43	1.72	0.82	0.42	1.05	0.12	0.05	0.09
14	0.37	0.25	0.50	1.84	0.45	1.83	1.02	0.35	1.15	0.13	0.06	0.08
15	0.42	0.28	0.46	2.16	0.45	1.79	1.18	0.32	1.04	0.17	0.06	0.08
16	0.48	0.34	0.49	2.31	0.39	1.53	1.34	0.34	0.86	0.15	0.05	0.08
17	0.46	0.38	0.74	1.89	0.36	1.51	1.47	0.38	0.74	0.14	0.05	0.08
18	0.51	0.38	1.55	1.95	0.39	1.34	1.35	0.40	1.06	0.16	0.05	0.08
19	0.77	0.44	2.64	1.59	0.42	1.27	1.26	0.41	0.77	0.14	0.05	0.07
20	0.71	0.57	3.28	1.14	0.42	1.15	1.33	0.43	0.69	0.11	0.05	0.06
21	0.62	0.72	2.92	1.09	0.40	0.98	1.41	0.40	0.58	0.12	0.05	0.06
22	0.57	0.80	2.07	1.53	0.38	0.96	3.56	0.38	0.52	0.11	0.11	0.06
23	0.54	0.92	1.50	2.04	0.43	0.95	5.11	0.61	0.52	0.10	0.08	0.08
24	0.52	1.13	1.29	2.36	0.52	1.05	3.96	0.65	0.52	0.09	0.05	0.07
25	0.51	1.16	1.27	1.84	0.60	1.39	2.69	0.81	0.49	0.09	0.05	0.08
26	0.48	1.10	1.46	1.36	0.62	3.98	1.82	0.84	0.44	0.09	0.05	0.09
27	0.44	1.09	2.24	1.18	0.62	6.30	1.44	0.71	0.41	0.07	0.05	0.08
28	0.38	1.18	2.20	1.10	0.63	7.96	1.28	0.61	0.35	0.08	0.06	0.08
29	0.33	1.22	2.04	1.01	0.79	7.33	1.10	0.59	0.29	0.075	0.06	0.09
30	0.29	1.26	1.72	1.05	-------	5.78	0.91	0.96	0.27	0.075	0.06	0.09
31	0.26	-------	1.37	1.24	-------	4.24	-------	1.19	-------	0.075	0.05	-------

Daily Discharge, in Second-feet, of Shenango River at Turnerville, Crawford County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	49.5	22.8	326	527	578	177	745	195	262	27.7	6.3	6.0
2	108	21.2	275	1,220	615	166	690	163	188	21.2	6.0	6.0
3	102	21.2	238	1,550	536	155	669	151	184	19.7	6.0	6.0
4	79.6	21.2	199	1,680	268	141	552	164	144	31.1	6.0	6.0
5	93.7	21.2	177	1,192	195	112	300	165	112	31.1	6.0	6.0
6	93.7	19.7	159	1,111	124	93.7	235	173	112	22.8	6.0	6.6
7	79.6	21.2	148	1,090	102	265	199	159	105	11.5	6.3	10.6
8	66.2	21.2	134	824	96.6	689	173	134	99.5	9.8	6.6	12.4
9	54.0	21.2	128	694	93.7	664	166	124	88.0	10.6	6.6	14.5
10	45.1	18.2	115	605	74.2	670	173	108	124	9.8	6.3	18.2
11	36.8	18.2	90.8	336	71.5	699	169	96.6	211	11.5	6.6	14.5
12	40.9	19.7	82.4	307	68.8	678	169	76.9	211	11.5	6.3	9.8
13	45.1	22.8	90.8	649	63.6	645	188	61.1	272	9.8	6.0	7.5
14	49.5	26.0	52.4	662	68.8	661	258	45.1	303	10.6	6.3	7.0
15	61.1	31.1	71.5	480	68.8	657	316	38.8	265	14.5	6.3	7.0
16	76.9	43.0	79.6	340	54.0	605	506	43.0	203	12.4	6.0	7.0
17	71.5	47.3	159	214	47.3	600	588	51.7	159	11.5	6.0	7.0
18	85.2	51.7	610	168	54.0	506	517	56.3	272	13.4	6.0	7.0
19	169	66.2	728	204	61.1	388	371	58.7	169	11.5	6.0	6.6
20	148	102	816	127	61.1	303	493	63.6	141	9.0	6.0	6.3
21	118	151	758	282	56.3	197	565	56.3	105	9.8	6.0	6.3
22	102	180	682	390	51.7	197	878	51.7	88.0	9.0	9.0	6.3
23	93.7	225	597	680	63.6	197	1,449	115	88.0	8.2	7.0	7.0
24	88.0	297	423	701	88.0	198	1,006	128	88.0	7.5	6.0	6.6
25	85.2	307	388	662	112	231	732	184	79.6	7.5	6.0	7.0
26	76.9	286	585	527	118	1,013	660	195	66.2	7.5	6.0	7.5
27	66.2	282	695	316	118	2,170	578	148	58.7	6.6	6.0	7.0
28	51.7	316	693	286	131	3,880	405	115	45.1	7.0	6.3	7.0
29	40.9	336	680	255	177	3,180	286	108	32.9	6.8	6.3	7.5
30	32.9	371	645	268	-------	1,797	222	238	29.4	6.8	6.3	7.5
31	27.7	-------	537	350	-------	1,104	-------	321	-------	6.8	6.0	-------

Estimated Monthly Discharge of Shenango River at Turnerville, Crawford County
(Drainage area, 152 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	169	27.7	75.4	0.496	0.572
November	371	18.2	113	0.743	0.829
December	816	71.5	368	2.421	2.792
1916					
January	1,680	127	603	3.967	4.574
February	615	47.3	144	0.947	1.022
March	3,880	93.7	743	4.888	5.636
April	1,449	166	474	3.118	3.480
May	321	38.8	123	0.809	0.933
June	303	29.4	144	0.947	1.057
July	31.1	6.6	12.7	0.084	0.097
August	9.0	6.0	6.3	0.041	0.047
September	18.2	6.0	8.1	0.053	0.059
The year	3,880	6.0	236	1.553	21.098

OHIO BASIN—STATION NO. 38

LITTLE SHENANGO RIVER AT GREENVILLE

DESCRIPTION OF STATION

Location.—At third highway bridge, known as Quaker Bridge, over the Little Shenango River above its mouth.

Records Available.—Discharge complete from January 1, 1914, to September 30, 1916.

Drainage Area.—107 square miles.

Gage.—From October 1 to November 4, 1915, a staff gage, whose elevation of zero is 944.50 feet above mean sea level, located on the upstream side of the right abutment, was read by M. Loutzenhiser. On November 4, 1915, a Bristol self-recording gage was installed at the upstream side of the bridge adjacent to the staff gage and is placed on the same datum.

Channel.—Both banks are high and not subject to overflow, and the bed is composed of sand and gravel.

Discharge Measurements of Little Shenango River at Greenville, Mercer County
(Drainage area, 107 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1915		Sq. ft.	Feet	Sec.-ft.	
15	Oct. 8	Munn	262.1	1.51	44.4	Wading above station
16	Oct. 19	Munn	294.7	1.90	118	

Daily Mean Gage Heights, in feet, of Little Shenango River at Greenville, Mercer County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	1.82	1.46	1.68	5.05	2.63	1.85	2.29	1.87	1.47	1.36	1.12	1.14
2	1.97	1.45	1.66	6.21	2.17	1.79	2.27	1.78	1.45	1.35	1.11	1.17
3	1.81	1.44	1.65	4.11	1.87	1.77	2.10	1.81	2.27	1.42	1.12	1.16
4	1.72	1.25	1.65	2.57	1.94	1.79	1.98	2.15	2.14	1.42	1.12	1.13
5	1.69	1.30	1.65	2.78	1.82	1.77	1.88	1.94	1.76	1.37	1.12	1.18
6	1.58	1.35	1.64	3.32	1.78	1.74	1.80	1.93	1.62	1.32	1.19	1.20
7	1.57	1.31	1.60	2.41	1.79	2.89	1.74	1.87	1.81	1.30	1.20	1.19
8	1.52	1.33	1.56	2.06	1.92	5.19	1.73	1.78	2.28	1.26	1.20	1.32
9	1.50	1.36	1.52	1.99	1.91	4.78	1.83	1.67	2.04	1.28	1.22	1.51
10	1.48	1.30	1.50	1.87	1.76	4.38	2.02	1.59	2.21	1.72	1.25	1.41
11	1.42	1.28	1.51	2.04	1.71	4.06	2.01	1.56	2.25	1.64	1.22	1.29
12	1.40	1.34	1.61	2.03	1.72	3.25	1.97	1.50	1.93	1.43	1.20	1.21
13	1.36	1.40	1.56	3.31	1.70	2.36	1.84	1.47	1.73	1.39	1.19	1.17
14	1.35	1.41	1.58	2.67	1.69	3.08	2.66	1.48	1.61	1.34	1.16	1.18
15	1.46	1.54	1.62	2.07	1.64	3.41	2.73	1.55	1.58	1.29	1.17	1.20
16	1.53	1.73	1.63	2.03	1.56	3.90	2.10	1.66	1.59	1.29	1.17	1.21
17	1.49	1.62	2.45	2.29	1.56	3.63	2.52	1.64	1.55	1.37	1.15	1.19
18	1.60	1.53	4.68	2.29	1.61	3.42	2.35	1.58	1.61	1.39	1.12	1.14
19	1.86	1.67	3.44	2.06	1.63	2.95	2.09	1.53	1.80	1.37	1.10	1.11
20	1.62	1.96	2.35	1.83	1.63	2.21	2.59	1.48	1.97	1.34	1.09	1.10
21	1.51	2.23	2.04	2.54	1.55	2.12	2.76	1.44	1.74	1.62	1.09	1.10
22	1.49	2.24	1.92	3.55	1.60	2.16	3.44	1.51	1.64	1.72	1.18	1.11
23	1.49	1.86	1.88	2.81	1.85	2.94	3.09	2.18	1.54	1.43	1.64	1.12
24	1.51	1.71	2.07	2.18	2.18	2.85	2.54	1.89	1.55	1.33	1.55	1.12
25	1.52	1.65	2.80	2.05	2.34	3.17	2.27	1.64	1.75	1.27	1.34	1.13
26	1.52	1.63	3.47	2.00	2.26	5.12	2.18	1.55	1.56	1.24	1.23	1.15
27	1.56	1.78	2.42	2.00	2.02	5.70	2.21	1.53	1.46	1.20	1.20	1.16
28	1.49	2.09	2.42	2.00	1.98	4.55	2.68	1.69	1.42	1.12	1.20	1.11
29	1.49	2.05	2.22	1.92	1.96	3.43	2.16	1.66	1.40	1.06	1.20	1.14
30	1.49	1.79	2.03	2.26	-------	2.79	1.97	1.60	1.38	1.06	1.17	1.18
31	1.47	-------	2.07	2.59	-------	2.45	-------	1.54	-------	1.11	1.14	-------

Daily Discharge, in Second-feet, of Little Shenango River at Greenville, Mercer County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	98.6	39.6	70.6	1,825	363	104	236	110	40.7	29.0	9.4	10.8
2	136	38.5	65.5	2,637	196	97	229	90.0	38.5	28.0	8.7	12.9
3	96.3	37.4	65.5	1,167	110	89	174	96.3	229	35.2	9.4	12.2
4	78.0	19.0	65.5	339	128	82	139	190	187	35.2	9.4	10.1
5	72.3	23.0	65.5	425	99	69	112	128	86.0	30.0	9.4	13.6
6	54.4	28.0	63.8	682	90	62	94	125	60.4	25.0	14.3	15.0
7	53.1	24.0	57.0	278	73	258	82	110	96.3	23.0	15.0	14.3
8	46.6	26.0	51.8	162	61	526	80	90.0	232	19.8	15.0	25.0
9	44.0	29.0	46.6	117	60	476	101	68.9	156	21.4	16.6	45.3
10	41.8	23.0	44.0	110	54	414	150	55.7	209	78.0	19.0	34.1
11	35.2	21.4	45.3	156	52	378	147	51.8	222	63.8	16.6	22.2
12	33.0	27.0	58.7	153	51	356	136	44.0	125	36.3	15.0	15.8
13	29.0	33.0	51.8	676	45	364	103	40.7	80.0	32.0	14.3	12.9
14	28.0	34.1	54.4	379	43	429	375	41.8	58.7	27.0	12.2	13.6
15	39.6	49.2	60.4	165	42	354	404	50.5	54.4	22.2	12.9	15.0
16	47.9	80.0	62.1	153	36	326	174	68.9	55.7	22.2	12.9	15.8
17	42.9	60.4	293	236	33	319	320	63.8	50.5	30.0	11.5	14.3
18	57.0	47.9	1,566	236	38	267	256	54.4	58.7	32.0	9.4	10.8
19	108	68.9	746	162	41	220	171	47.9	94.0	30.0	8.0	8.7
20	60.4	133	256	101	41	172	347	41.8	136	27.0	7.4	8.0
21	45.3	216	156	328	36	130	416	37.4	82.0	60.4	7.4	8.0
22	42.9	219	122	810	35	160	746	45.3	63.8	78.0	13.6	8.7
23	42.9	108	112	437	46	219	565	200	49.2	36.3	63.8	9.4
24	45.3	76.0	165	200	70	226	328	115	50.5	26.0	50.5	9.4
25	46.6	66.0	433	159	98	607	229	63.8	84.0	20.6	27.0	10.1
26	46.6	62.1	763	144	100	1,875	200	50.5	51.8	18.2	17.4	11.5
27	44.0	90.0	282	144	90	2,280	209	47.9	39.6	15.0	15.0	12.2
28	42.9	171	282	144	90	1,475	383	72.3	35.2	9.4	15.0	8.7
29	42.9	159	213	122	90	741	193	67.2	33.0	5.6	15.0	10.8
30	42.9	92.0	153	226	-------	429	136	57.0	31.0	6.8	12.9	13.6
31	40.7	-------	165	347	-------	293	-------	49.2	-------	8.7	10.8	-------

Estimated Monthly Discharge of Little Shenango River at Greenville, Mercer County

(Drainage area, 107 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	136	28.0	54.4	0.508	0.586
November	219	19.0	70.0	0.654	0.730
December	1,566	44	214	2.000	2.306
1916					
January	2,637	101	426	3.961	4.590
February	363	33	79.7	0.745	0.804
March	2,280	62	445	4.159	4.796
April	746	80	241	2.252	2.513
May	200	37.4	76.6	0.716	0.826
June	232	31.0	96.4	0.901	1.006
July	78.0	5.6	30.1	0.281	0.324
August	63.8	7.4	16.0	0.150	0.173
September	45.3	8.0	14.4	0.135	0.151
The year	2,637	5.6	148	1.383	18.804

OHIO BASIN—STATION NO. 39

PYMATUNING CREEK BELOW ORANGEVILLE

DESCRIPTION OF STATION

Location.—At first highway bridge over Pymatuning Creek above its junction with the Shenango River.

Records Available.—Discharge complete from January 1, 1914, to September 30, 1916.

Drainage Area.—170 square miles.

Gage.—A chain gage, whose elevation of zero is assumed at 100 feet, is located on the upstream side of the bridge and is read by C. I. Mitcheltree.

Channel.—The right bank is high and not subject to overflow, the left bank overflows at gage height approximately 5.40 feet, and the bed is composed of gravel.

Remarks.—The mill at Orangeville produces some fluctuations in flow, particularly at low periods.

Daily Mean Gage Heights, in feet, of Pymatuning Creek below Orangeville, Mercer County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	0.80	0.85	1.90	3.26	2.66	*	3.22	1.80	1.26	0.85	0.70	0.70
2	1.50	0.80	1.80	6.35	2.56	*	2.71	1.62	1.81	0.85	0.75	0.72
3	1.70	0.75	1.65	6.97	2.35	*	2.33	1.52	2.82	1.10	0.70	0.70
4	1.55	0.80	1.50	6.73	*	1.39	1.99	1.65	2.12	0.90	0.75	0.70
5	1.50	0.80	1.45	5.97	*	1.33	1.77	1.71	1.93	0.95	0.70	0.68
6	1.60	0.75	1.40	4.28	*	1.39	1.62	1.80	1.71	0.90	0.70	0.68
7	1.50	0.80	1.35	3.58	*	2.43	1.47	1.77	1.67	0.85	0.70	0.75
8	1.30	0.90	1.20	3.35	*	4.80	1.40	1.62	1.48	0.80	0.75	0.85
9	1.10	0.80	1.25	3.13	1.81	5.05	1.42	1.48	1.43	0.80	0.80	0.75
10	1.00	0.80	1.30	2.71	1.25	5.32	1.70	1.32	1.52	0.85	0.72	0.80
11	0.95	0.75	1.60	2.18	1.21	*	2.20	1.18	1.60	0.80	0.72	0.78
12	0.95	0.80	2.10	2.43	1.19	*	2.24	1.14	1.68	0.80	0.75	0.78
13	0.90	0.80	1.40	3.61	1.15	*	2.34	1.10	1.58	0.80	0.72	0.80
14	0.80	0.85	1.30	2.96	1.14	*	2.91	1.08	1.49	0.80	0.70	0.75
15	1.00	0.80	1.80	*	1.10	*	2.67	1.18	1.48	0.80	0.72	0.80
16	1.05	1.10	1.85	*	1.06	*	2.64	1.15	1.38	0.80	0.70	0.80
17	1.25	1.10	2.00	*	1.07	*	2.71	1.14	1.27	0.90	0.75	0.75
18	1.30	1.05	3.90	*	1.11	*	2.51	1.15	1.25	0.85	0.70	0.70
19	1.60	1.15	4.55	*	1.20	*	2.42	1.34	1.60	0.85	0.70	0.70
20	2.00	1.40	4.40	*	1.19	*	2.57	1.30	1.61	0.80	0.72	0.75
21	1.85	1.90	4.20	*	1.14	*	3.06	1.24	1.43	0.85	0.70	0.72
22	1.65	2.00	3.60	*	1.15	2.45	4.79	1.27	1.39	0.90	0.72	0.78
23	1.50	1.90	2.80	3.00	1.33	3.22	5.73	1.88	1.27	1.00	0.75	0.75
24	1.30	1.80	2.55	3.06	1.56	3.07	5.12	1.94	1.17	0.90	0.72	0.70
25	1.15	1.70	2.55	2.87	*	3.37	4.03	1.84	1.27	0.85	0.70	0.70
26	0.80	1.60	2.90	2.65	*	5.46	3.29	1.75	1.12	0.80	0.70	0.72
27	0.95	1.55	2.80	2.38	*	7.18	2.89	1.56	1.04	0.80	0.72	0.72
28	0.95	1.75	3.00	2.17	*	7.37	2.72	1.43	0.97	0.80	0.70	0.70
29	0.90	1.95	3.00	2.06	*	6.53	2.38	1.42	0.89	0.75	0.70	0.75
30	0.85	1.90	2.85	2.31	-------	5.24	2.05	1.50	0.85	0.70	0.68	0.78
31	0.90	-------	2.80	2.47	-------	3.97	-------	1.42	-------	0.75	0.70	-------

NOTE—*Ice cover. Readings interpolated from Sharon.

Daily Discharge, in Second-feet, of Pymatuning Creek below Orangeville, Mercer County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	13.2	18.2	218	583	415	134	572	194	82	18.2	6.4	6.4
2	128	13.2	194	1,947	388	122	429	153	197	18.2	9.3	7.4
3	171	9.3	160	2,398	333	100	328	132	459	54	6.4	6.4
4	138	13.2	128	2,220	185	106	240	160	273	24.2	9.3	6.4
5	125	13.2	118	1,696	191	95	187	173	226	30.9	6.4	5.5
6	149	9.3	108	907	132	166	153	194	173	24.2	6.4	5.5
7	128	13.2	98	680	152	354	122	187	143	18.2	6.4	9.3
8	89	24.2	71	619	87	1,101	106	153	124	13.2	9.3	18.2
9	54	13.2	80	546	91	1,208	112	124	114	13.2	13.2	9.3
10	38.4	13.2	89	429	89	1,330	171	93	132	18.2	7.4	13.2
11	30.9	9.3	149	289	73	443	294	68	149	13.2	7.4	11.5
12	30.9	13.2	268	354	69	386	304	61	167	13.2	9.3	11.5
13	24.2	13.2	108	689	62	450	330	54	145	13.2	7.4	13.2
14	13.2	18.2	89	496	61	645	484	51	126	13.2	6.4	9.3
15	38.4	13.2	89	282	54	402	418	68	114	13.2	7.4	13.2
16	46.2	54.0	98	305	48	320	410	62	106	13.2	6.4	13.2
17	71	54.0	243	243	49	354	429	61	84	24.2	9.3	9.3
18	89	46.2	781	188	56	292	375	62	80	18.2	6.4	6.4
19	149	62.0	1,006	167	71	271	251	97	149	18.2	6.4	6.4
20	243	108	950	143	69	218	390	89	151	13.2	7.4	9.3
21	206	218	880	206	61	201	526	78	114	18.2	6.4	7.4
22	160	243	686	436	62	359	1,007	84	106	24.2	7.4	11.5
23	128	218	453	509	95	572	1,548	213	84	38.4	9.3	9.3
24	89	194	386	526	141	529	1,239	228	66	24.2	7.4	6.4
25	62	171	386	473	186	616	823	204	84	18.2	6.4	6.4
26	13.2	149	481	412	186	1,400	592	182	57	13.2	6.4	7.4
27	30.9	138	453	341	155	2,559	478	141	45	13.2	7.4	7.4
28	30.9	182	509	286	138	2,711	431	114	34	13.2	6.4	6.4
29	24.2	230	509	258	134	2,074	341	112	23	9.3	6.4	9.3
30	18.2	218	467	323	-------	1,293	256	128	18.2	6.4	5.5	11.5
31	24.2	-------	453	364	-------	803	-------	112	-------	9.3	6.4	-------

NOTE—See "Daily Mean Gage Heights" for ice conditions.

Estimated Monthly Discharge of Pymatuning Creek below Orangeville, Mercer County

(Drainage area, 170 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	243	13.2	82.5	0.485	0.559
November	243	9.3	83.1	0.489	0.546
December	1,006	71	345	2.029	2.339
1916					
January	2,398	143	623	3.665	4.226
February	415	48	132	0.776	0.837
March	2,711	95	695	4.088	4.713
April	1,548	108	451	2.653	2.961
May	228	51	124	0.729	0.841
June	459	18	128	0.753	0.840
July	54.0	6.4	18.5	0.109	0.126
August	13.2	5.5	7.4	0.044	0.051
September	18.2	5.5	9.1	0.054	0.060
The year	2,711	5.5	226	1.329	18.099

NOTE—See "Daily Mean Gage Heights" for ice conditions.

OHIO BASIN—STATION NO. 40

SHENANGO RIVER AT SHARON

DESCRIPTION OF STATION

Location.—At single span, steel, through truss, highway bridge at Chestnut Street, Sharon, Mercer County.

Records Available.—Discharge complete from August 1, 1909, to September 30, 1916.

Drainage Area.—611 square miles.

Gage.—A staff gage, whose elevation of zero was 840 feet above mean sea level, was originally fastened to the cribbing on the right bank of the river about 50 feet above the Chestnut Street Bridge. This gage was washed out by high water in March, 1913, and gage heights were obtained by measuring to the water surface from a chisel mark on handrail 15 feet from west, or right abutment, upstream side, west end of bridge, whose elevation was 862.57 feet above mean sea level, from March, 1913, to March 31, 1915. On April 1, 1915, a Bristol recording gage, whose elevation of zero is 840 feet above mean sea level, was installed on the bridge.

Channel.—Both banks are approximately 12 feet above the river bed, which is composed of gravel and dirt.

Discharge Measurements of Shenango River at Sharon, Mercer County

(Drainage area, 611 square miles)

No.	Date	Hydrographer	Area	G. H.	Dis.	Remarks
	1916		Sq. ft.	Feet	Sec.-ft.	
87	Mar. 27	McElrath	2,127	10.81	7,224	Surface & bottom. State St. bridge
88	Mar. 27	McElrath	2,169	11.01	7,656	Surface & bottom. State St. bridge
89	Mar. 27	McElrath	2,229	11.36	8,167	Surface & bottom. State St. bridge
90	Mar. 27	McElrath	2,251	11.49	8,330	Surface & bottom. State St. bridge
91	Mar. 27	McElrath	2,269	11.59	8,658	Surface & bottom. State St. bridge
92	Mar. 27	McElrath	2,286	11.67	8,757	Surface & bottom. State St. bridge
93	Mar. 28	McElrath	2,323	11.88	8,957	Multiple point. State St. bridge
94	Mar. 28	McElrath	2,304	11.77	8,754	Multiple point. State St. bridge
95	Mar. 28	McElrath	2,297	11.71	8,748	Multiple point. State St. bridge
96	Mar. 29	McElrath	2,227	11.36	8,144	Multiple point. State St. bridge
97	Mar. 29	McElrath	2,217	11.28	7,891	Multiple point. State St. bridge
98	Mar. 29	McElrath	2,197	11.18	7,785	Multiple point. State St. bridge
99	Mar. 30	McElrath	2,003	10.09	6,251	Multiple point. State St. bridge
100	July 24	McElrath	642	2.37	96.6	Multiple point. Mill St. bridge

NOTE—All gage heights and discharges referred to Chestnut Street gage, areas at point of measurement, except No. 100.

Daily Mean Gage Heights, in feet, of Shenango River at Sharon, Mercer County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	2.64	2.44	3.95	5.64	5.54	3.58	6.35	4.03	3.44	2.43	1.90	1.91
2	3.31	2.47	3.82	9.59	5.07	3.48	5.65	3.78	3.32	2.40	1.85	1.93
3	3.58	2.40	3.71	10.58	4.71	3.37	5.10	3.68	4.77	2.52	1.85	1.95
4	3.26	2.37	3.54	8.08	4.04	3.30	4.63	4.09	4.50	2.60	1.84	1.89
5	3.13	2.36	3.39	7.80	4.02	3.22	4.29	4.03	3.83	2.43	1.95	1.85
6	3.40	2.38	3.30	7.48	3.56	3.20	4.01	3.96	3.46	2.40	2.24	1.81
7	3.22	2.35	3.24	6.56	3.42	5.97	3.74	3.90	3.29	2.37	2.19	2.01
8	2.96	2.30	3.17	5.73	3.15	7.58	3.59	3.69	3.71	2.29	2.34	2.41
9	2.83	2.40	3.17	5.37	3.12	7.07	3.67	3.44	3.70	2.22	2.27	2.39
10	2.76	2.32	3.14	5.07	3.18	6.17	4.28	3.22	3.69	2.19	2.22	2.35
11	2.67	2.34	3.04	4.86	3.12	5.48	4.50	3.05	4.05	2.32	2.13	2.20
12	2.64	2.33	2.95	4.70	3.12	5.17	4.31	2.91	4.01	2.48	2.10	2.21
13	2.58	2.40	3.09	6.71	2.99	5.52	4.11	2.81	3.70	2.34	2.08	2.19
14	2.56	2.44	3.06	6.12	2.84	6.44	5.16	2.73	3.61	2.26	2.01	2.09
15	2.67	2.50	2.89	4.63	2.81	5.26	5.69	2.76	3.59	2.21	1.96	2.16
16	2.90	2.94	2.98	4.77	2.78	4.80	4.87	2.90	3.48	2.26	1.87	2.14
17	2.96	2.90	4.25	4.38	2.76	4.99	5.23	2.97	3.27	2.24	1.85	2.03
18	2.88	2.82	7.80	4.00	2.84	4.63	5.24	2.99	3.12	2.23	1.93	2.00
19	3.39	2.90	7.73	3.84	2.87	4.50	4.75	2.99	3.65	2.28	1.86	1.96
20	3.82	3.35	6.21	3.65	2.87	4.14	5.10	2.92	3.75	2.23	1.86	1.95
21	3.50	3.82	5.73	4.13	2.78	4.04	5.97	2.82	3.55	2.21	1.87	1.96
22	3.25	4.22	5.28	5.52	2.77	4.67	7.38	2.86	3.26	2.19	1.90	1.96
23	3.05	3.86	4.90	6.00	3.02	5.72	7.93	3.95	3.05	2.47	1.86	1.99
24	2.95	3.72	4.80	5.50	3.50	5.85	7.78	4.03	2.91	2.33	1.80	1.95
25	2.87	3.76	5.29	5.32	3.99	6.95	6.54	3.56	3.07	2.23	2.16	1.89
26	2.77	3.72	6.48	5.06	3.99	9.22	5.69	3.50	3.02	2.21	2.21	1.87
27	2.70	3.69	5.61	4.74	3.75	11.05	5.27	3.42	2.79	2.15	2.09	1.85
28	2.68	4.04	5.59	4.55	3.61	11.86	5.67	3.32	2.67	2.13	2.02	1.92
29	2.64	4.08	5.40	4.32	3.58	11.27	4.93	3.28	2.59	2.00	2.00	1.94
30	2.58	4.00	4.96	5.02	-------	9.83	4.36	3.24	2.51	1.94	1.99	1.91
31	2.52	-------	4.78	5.42	-------	7.80	-------	3.37	-------	1.93	1.94	-------

Daily Discharge, in Second-feet, of Shenango River at Sharon, Mercer County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	155	108	652	1,649	1,582	482	2,166	701	423	106	26	27
2	372	114	590	5,466	1,278	440	1,656	572	376	99	24	28
3	482	99	540	6,888	1,061	395	1,297	526	1,096	126	24	30
4	353	93	465	4,806	696	368	1,014	721	940	145	24	26
5	306	91	403	3,446	686	338	826	691	595	106	30	24
6	407	95	368	3,139	474	231	681	657	432	92	69	23
7	338	89	346	2,332	415	1,880	552	628	364	93	60	35
8	245	79	320	1,711	313	3,234	487	531	540	77	87	101
9	208	99	320	1,470	302	2,761	522	423	535	65	74	97
10	188	83	309	1,278	324	2,028	820	338	521	60	65	89
11	163	87	275	1,159	302	1,542	940	280	701	83	52	62
12	155	85	245	1,055	302	1,341	836	232	681	117	47	64
13	140	99	292	2,453	258	1,568	731	202	535	87	44	60
14	135	108	281	1,990	211	2,237	1,335	179	495	72	35	46
15	163	121	226	1,014	202	1,398	1,683	188	487	64	31	56
16	229	242	255	1,096	193	1,114	1,156	229	440	72	25	53
17	248	220	804	874	188	1,229	1,398	251	357	60	24	38
18	223	205	3,446	676	211	1,014	1,386	258	302	67	28	34
19	399	229	3,378	600	220	940	1,084	258	513	76	25	31
20	590	388	2,058	513	220	747	1,297	235	558	67	25	30
21	448	590	1,711	742	193	696	1,880	205	470	64	25	31
22	350	789	1,411	1,568	191	1,038	3,045	217	353	60	26	31
23	280	609	1,174	1,902	268	1,704	3,574	652	289	114	25	33
24	245	544	1,114	1,555	448	1,794	3,427	691	232	85	23	30
25	220	563	1,418	1,437	671	2,682	2,316	474	285	67	56	26
26	191	544	2,268	1,235	671	4,984	1,683	448	268	64	64	25
27	171	531	1,629	1,079	558	7,640	1,405	415	196	54	46	24
28	166	696	1,615	968	495	8,978	1,670	376	163	52	37	28
29	155	716	1,482	842	482	7,992	1,192	361	143	34	34	29
30	140	676	1,211	1,247	-------	5,802	863	346	123	29	33	27
31	126	-------	1,102	1,502	-------	5,476	-------	395	-------	28	29	-------

Estimated Monthly Discharge of Shenango River at Sharon, Mercer County

(Drainage area, 611 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	590	126	258	0.422	0.487
November	789	79	300	0.491	0.548
December	3,446	226	1,023	1.674	1.930
1916					
January	6,888	513	1,861	3.046	3.512
February	1,582	188	463	0.758	0.818
March	5,978	331	2,328	3.810	4.393
April	3,574	487	1,431	2.342	2.614
May	721	179	409	0.669	0.771
June	1,096	123	447	0.732	0.817
July	145	28	77.5	0.127	0.146
August	87	23	39.3	0.064	0.074
September	101	23	41.3	0.068	0.076
The year	8,978	23	726	1.188	16.186

OHIO BASIN—STATION NO. 41

SHENANGO RIVER AT NEW CASTLE

DESCRIPTION OF STATION

Location.—At West Washington Street Bridge over Shenango River at New Castle, Lawrence County.

Records Available.—Discharge complete from January 1, 1910, to September 30, 1916.

Drainage Area.—797.4 square miles.

Gage.—A chain gage, whose elevation of zero is 787.00 feet above mean sea level, is located on the bridge and was read from October 1, 1915, to March 31, 1916, by H. T. Munn and R. D. Patterson, and since that date by W. S. Treser.

Channel.—The right bank is high and not subject to overflow, the left bank is high and overflows only during extreme floods, and the bed is composed of rock and gravel.

Daily Mean Gage Heights, in feet, of Shenango River at New Castle, Lawrence County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	788.79	788.60	789.81	791.26	791.38	789.48	792.15	790.08	789.28	788.60	788.11	788.18
2	89.02	88.52	89.72	94.21	91.02	89.43	91.38	89.79	89.29	88.58	88.04	88.11
3	89.63	88.55	89.58	95.42	90.58	89.35	90.93	89.68	90.61	88.70	88.00	88.08
4	89.52	88.53	89.47	94.96	90.05	89.28	90.51	90.16	90.80	88.72	87.98	88.10
5	89.29	88.52	89.32	93.58	89.93	89.22	90.20	90.10	89.90	88.68	88.09	88.32
6	89.20	88.45	89.21	93.00	89.63	89.20	89.94	89.89	89.48	88.56	88.05	88.18
7	89.41	88.43	89.20	92.28	89.39	90.90	89.71	89.92	89.30	88.53	88.08	88.10
8	89.22	88.47	89.12	91.32	89.32	93.77	89.60	89.78	89.34	88.52	88.38	88.12
9	88.98	88.50	89.10	90.93	89.20	92.91	89.69	89.54	89.66	88.74	88.62	88.14
10	88.81	88.50	89.16	90.71	89.11	91.95	90.22	89.28	89.55	88.62	88.64	88.49
11	88.79	88.50	89.09	90.68	89.12	91.16	90.61	89.18	89.79	88.52	88.33	88.40
12	88.72	88.52	89.05	90.61	89.13	90.81	90.32	89.02	89.92	88.46	88.26	88.34
13	88.71	88.50	88.92	92.59	89.10	90.87	90.09	88.90	89.62	88.52	88.20	88.25
14	88.67	88.51	89.10	92.34	89.04	92.03	90.58	88.85	89.42	88.48	88.23	88.30
15	88.67	88.66	88.99	90.85	89.19	91.41	91.49	88.84	89.41	88.43	88.22	88.32
16	88.79	88.71	88.88	90.42	89.28	90.42	90.92	88.92	89.63	88.57	88.20	88.28
17	88.91	88.91	89.44	90.45	89.08	90.31	90.97	89.04	89.38	88.60	88.17	88.20
18	88.96	88.90	92.60	90.06	88.92	90.51	91.15	89.02	89.20	88.56	88.11	88.14
19	88.92	88.92	93.33	89.92	88.95	90.34	90.60	89.03	89.56	88.49	87.93	88.21
20	89.68	89.11	92.20	89.78	88.94	90.19	90.69	88.99	89.80	88.42	88.00	88.10
21	89.60	89.60	91.34	89.84	88.93	89.99	91.47	88.90	89.69	88.38	88.00	88.17
22	89.32	90.03	90.99	90.98	88.98	90.80	92.89	88.93	89.52	88.42	88.14	88.13
23	89.21	89.91	90.77	91.67	89.21	91.98	93.10	89.73	89.20	88.42	88.45	88.10
24	88.99	89.61	90.71	91.22	89.54	92.07	93.07	90.12	89.00	88.46	88.30	88.19
25	88.93	89.59	91.13	90.96	89.80	92.88	92.39	89.66	88.99	88.42	88.13	88.11
26	88.88	89.56	92.15	90.82	89.85	94.38	91.50	89.42	89.16	88.38	88.10	88.06
27	88.80	89.56	91.52	90.65	89.74	95.22	91.10	89.36	88.96	88.38	88.12	88.09
28	88.72	89.78	91.14	90.47	89.61	96.05	91.56	89.30	88.84	88.32	88.16	88.08
29	88.71	89.95	91.37	90.26	89.53	96.20	91.12	89.44	88.68	88.33	88.30	88.08
30	88.68	89.85	91.25	90.59	-------	95.52	90.45	89.25	88.62	88.30	88.26	88.05
31	88.61	-------	90.83	91.28	-------	94.00	-------	89.20	-------	88.28	88.20	-------

Daily Discharge, in Second-feet, of Shenango River at New Castle, Lawrence County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	227	153	823	2,128	2,254	607	3,161	1,027	481	153	34.6	46.3
2	334	127	762	6,188	1,876	575	2,254	809	487	146	24.7	34.6
3	703	136	670	8,464	1,401	524	1,784	736	1,474	190	19.7	30.2
4	633	130	601	7,531	1,004	481	1,383	1,090	1,656	198	17.1	33.1
5	487	127	506	5,148	912	443	1,122	1,042	889	183	31.7	74.2
6	431	106	437	4,275	703	431	910	882	607	140	26.1	46.3
7	562	101	431	3,281	550	1,754	756	904	493	130	30.2	33.1
8	443	112	387	2,191	506	5,456	683	803	518	127	88.2	36.1
9	313	120	376	1,784	431	4,144	742	645	723	206	160	39.3
10	235	120	376	1,570	382	2,888	1,138	431	652	160	168	117
11	227	120	371	1,541	387	2,023	1,474	420	809	127	76.5	93.2
12	198	127	350	1,474	392	1,635	1,221	334	904	109	61.4	78.8
13	194	120	285	3,686	376	1,725	1,034	275	698	127	50.0	59.5
14	179	123	376	3,355	344	2,981	1,447	253	569	114	55.7	70.0
15	179	175	318	1,705	426	2,286	2,370	249	562	101	53.8	74.2
16	227	194	263	1,305	481	1,305	1,774	285	723	143	50.0	65.5
17	280	280	582	1,331	365	1,212	1,825	344	543	153	44.6	50.0
18	304	275	3,700	1,011	285	1,383	2,012	334	431	140	34.6	39.3
19	285	285	4,760	904	299	1,238	1,465	339	658	117	17.1	51.9
20	736	382	3,185	803	294	1,114	1,550	318	816	98.3	19.7	33.1
21	683	683	2,212	845	280	957	2,348	275	742	88.2	19.7	44.6
22	506	988	1,845	1,835	313	1,656	4,116	289	633	98.3	39.3	37.8
23	437	897	1,627	2,567	437	2,922	4,420	769	431	98.3	106	33.1
24	318	690	1,570	2,086	645	3,029	4,376	1,058	323	109	70.0	48.1
25	289	677	1,992	1,815	816	4,101	3,418	723	318	98.3	37.8	34.6
26	266	658	3,125	1,676	852	6,485	2,380	569	409	88.2	33.1	27.4
27	231	658	2,402	1,512	776	8,018	1,960	531	304	88.2	36.1	31.7
28	198	803	2,002	1,348	690	9,695	2,446	493	249	74.2	42.8	30.2
29	194	927	2,244	1,171	639	10,010	1,981	582	183	76.5	76.0	30.2
30	183	852	2,118	1,456	-------	8,600	1,331	462	160	70.0	61.4	26.1
31	157	-------	1,685	2,149	-------	5,835	-------	431	-------	65.5	50.0	-------

Estimated Monthly Discharge of Shenango River at New Castle, Lawrence County

(Drainage area, 797.4 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	736	157	343	0.430	0.496
November	988	101	372	0.467	0.521
December	4,760	266	1,367	1.714	1.976
1916					
January	8,404	803	2,519	3.159	3.642
February	2,254	285	659	0.826	0.891
March	10,010	431	3,082	3.865	4.453
April	4,420	683	1,963	2.462	2.746
May	1,090	249	573	0.719	0.829
June	1,656	160	615	0.771	0.860
July	206	65.5	123	0.154	0.178
August	168	17.1	52.6	0.066	0.076
September	117	26.1	48.3	0.061	0.068
The year	10,010	17.1	981	1.230	16.739

OHIO BASIN—STATION NO. 42

MAHONING RIVER AT NEW CASTLE

DESCRIPTION OF STATION

Location.—At Borough Line Bridge, which is the first highway bridge above the mouth of the river.

Records Available.—Discharge measurements from March 10, 1914, and discharge complete from August 12, 1914, to September 30, 1916.

Drainage Area.—1,070 square miles.

Gage.—A chain gage, whose elevation of zero is 760.00 feet, New Castle City Datum, is located on the downstream side of the bridge and is read by C. O. Brest.

Channel.—Both banks overflow at gage height approximately 11 feet, and the bed is composed of sand and gravel.

Remarks.—Data at this station to October 1, 1914, has been published under Mahoning River at Lawrence Junction, Lawrence County.

Daily Mean Gage Heights, in feet, of Mahoning River at New Castle, Lawrence County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	3.22	2.88	4.30	9.07	7.00	3.89	5.40	4.88	4.53	4.70	2.24	1.17
2	3.51	2.84	4.20	11.56	6.54	3.75	4.99	4.42	5.03	4.70	1.93	1.14
3	3.60	2.84	3.89	12.30	5.41	3.68	4.86	4.48	6.32	4.64	1.50	1.12
4	3.83	2.56	3.72	11.39	5.17	3.63	4.70	4.63	6.70	4.60	1.50	1.14
5	3.98	2.29	3.51	8.05	4.96	3.60	4.45	4.60	6.00	4.56	1.48	1.17
6	3.73	2.45	3.51	6.96	4.70	3.87	4.25	4.45	5.63	4.52	1.47	1.18
7	3.66	2.52	3.60	6.75	3.85	7.78	3.99	4.44	5.63	4.49	1.42	2.00
8	3.51	2.82	3.48	5.69	3.30	10.27	3.74	4.42	5.59	4.42	1.30	2.02
9	3.34	2.58	3.35	4.84	3.18	9.77	4.03	4.42	5.44	4.32	1.30	2.16
10	3.12	2.39	3.25	4.57	3.48	8.41	5.04	4.17	5.21	4.26	1.28	2.02
11	2.92	2.76	3.47	4.60	3.52	6.78	5.22	3.94	4.98	4.43	1.24	2.00
12	2.59	2.72	3.53	6.85	3.49	5.53	5.46	3.73	4.79	4.15	1.20	1.98
13	2.82	2.72	3.30	9.30	3.38	5.67	5.55	3.58	4.42	3.35	1.20	1.96
14	2.62	2.87	3.25	8.59	3.18	5.94	5.70	3.54	4.36	3.30	1.22	1.93
15	2.87	3.00	3.44	6.96	3.40	6.93	6.11	3.54	4.34	3.28	1.20	1.89
16	2.68	3.15	3.28	5.53	3.30	6.37	5.92	3.56	4.29	3.05	1.18	1.85
17	2.66	3.05	3.71	4.99	3.35	5.37	5.89	3.61	4.31	2.94	1.16	1.81
18	2.93	3.16	6.53	4.36	3.30	5.06	5.81	3.64	4.34	2.82	1.50	1.79
19	3.12	3.59	7.93	4.06	3.14	4.95	5.84	3.62	4.40	2.70	1.49	1.75
20	3.03	3.56	7.24	3.92	3.22	4.61	5.38	3.59	4.45	2.72	1.46	1.71
21	4.00	4.34	6.44	3.94	3.30	4.50	5.05	3.52	4.48	2.74	1.51	1.68
22	3.80	4.85	6.55	4.66	3.38	5.66	7.82	3.54	4.52	2.79	2.00	1.65
23	3.46	4.62	6.89	5.40	3.46	7.08	7.57	3.58	4.56	2.88	2.48	1.60
24	3.54	4.53	5.24	5.51	3.40	8.39	6.91	3.63	5.02	2.92	2.46	1.59
25	2.98	4.01	5.32	5.12	3.98	9.44	6.21	3.66	5.04	2.90	2.46	1.56
26	3.20	3.45	6.08	4.96	4.06	12.08	5.50	3.24	4.92	2.88	2.44	1.58
27	3.00	3.82	6.54	5.02	4.25	12.64	5.56	3.84	4.88	2.88	2.43	2.02
28	2.62	4.00	6.04	5.12	4.15	11.95	5.88	4.69	4.84	2.86	2.39	2.10
29	2.80	4.65	6.28	5.07	4.05	9.92	6.42	4.94	4.82	2.82	2.34	2.16
30	2.98	4.51	6.54	5.32	------	7.84	5.70	4.99	4.74	2.78	2.27	2.18
31	2.82	------	7.02	6.47	------	6.39	------	4.54	------	2.68	1.60	------

Daily Discharge, in Second-feet, of Mahoning River at New Castle, Lawrence County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	226	159	630	5,774	2,700	426	1,315	967	756	850	79.0	7.2
2	295	152	575	11,949	2,248	368	1,038	696	1,064	850	51.4	5.8
3	318	152	426	13,784	1,322	344	954	729	2,048	817	23.0	4.9
4	398	113	357	11,527	1,156	328	850	812	2,400	795	23.0	5.8
5	466	84	295	3,930	980	318	712	795	1,780	773	22.0	7.2
6	360	100	295	2,660	850	416	602	712	1,508	751	21.5	7.6
7	337	108	318	2,450	408	3,576	470	707	1,484	734	19.0	57.0
8	295	148	287	1,532	244	8,750	364	696	1,452	696	13.0	58.6
9	253	116	255	941	218	7,510	490	696	1,343	641	13.0	71.0
10	206	94	233	778	287	4,466	1,071	560	1,182	608	12.1	58.6
11	166	139	284	844	297	2,480	1,189	448	1,032	702	10.2	57.0
12	117	134	300	2,550	289	1,408	1,357	360	908	550	8.5	55.4
13	148	134	244	6,344	262	1,516	1,422	313	696	255	8.5	53.8
14	121	157	233	4,768	218	1,732	1,540	302	663	244	9.4	51.4
15	157	182	276	2,690	266	2,630	1,868	302	652	240	8.5	48.3
16	126	212	240	1,408	244	2,093	1,716	308	624	192	7.6	45.5
17	126	192	354	1,038	255	1,294	1,692	321	636	170	6.7	42.7
18	168	214	2,238	633	244	1,084	1,628	331	652	148	23.0	41.3
19	206	315	3,769	505	210	1,012	1,652	324	685	131	22.5	38.5
20	188	308	2,944	439	226	800	1,301	315	712	134	21.0	35.7
21	475	652	2,156	448	244	740	1,078	297	729	137	23.6	33.8
22	385	948	2,258	828	262	1,508	3,626	302	751	144	57.0	32.0
23	282	806	2,590	1,315	282	2,780	3,324	313	773	159	104.0	29.0
24	302	756	1,203	1,392	266	4,435	2,610	328	1,058	166	102.0	28.4
25	178	480	1,259	1,123	463	6,691	1,954	337	1,071	162	102.0	26.6
26	222	279	1,844	1,019	505	13,238	1,385	231	993	159	99.4	27.8
27	182	394	2,248	1,058	602	14,627	1,430	403	967	159	98.3	58.6
28	121	475	1,812	1,123	550	12,916	1,684	842	941	155	94.0	65.0
29	145	822	2,013	1,090	500	7,882	2,138	1,006	928	148	89.0	71.0
30	178	746	2,248	1,259	-------	3,652	1,540	1,038	876	142	82.0	73.0
31	148	-------	2,720	2,183	-------	2,111	-------	762	-------	128	29.0	-------

Estimated Monthly Discharge of Mahoning River at New Castle, Lawrence County

(Drainage area, 1,070 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	475	117	235	0.220	0.254
November	948	84	319	0.298	0.333
December	3,769	233	1,190	1.112	1.282
1916					
January	13,784	439	2,883	2.694	3.106
February	2,700	210	572	0.535	0.577
March	14,627	318	3,649	3.410	3.932
April	3,626	364	1,467	1.371	1.530
May	1,038	231	534	0.499	0.575
June	2,400	624	1,045	0.977	1.090
July	850	128	385	0.360	0.415
August	104	6.7	41.4	0.039	0.045
September	73.0	4.9	40.0	0.037	0.041
The year	14,627	4.9	1,036	0.968	13.180

OHIO BASIN—STATION NO. 43

BEAVER RIVER AT NEWPORT, LAWRENCE COUNTY

DESCRIPTION OF STATION

Location.—At highway bridge at Newport, one mile north of Wampum, Pa.

Records Available.—Discharge complete from October 1, 1914, to September 30, 1916.

Drainage Area.—2,125 square miles.

Gage.—A standard chain gage, whose elevation of zero is 737.08 feet above mean sea level, is located on the downstream side of the bridge and is read by Samuel Truby.

Channel.—The right bank is high and not subject to overflow, the left bank is subject to overflow at elevation 750.58 feet, and the bed is composed of sand and gravel.

Daily Mean Gage Heights, in feet, of Beaver River at Newport, Lawrence County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.
1	2.36	2.02	4.08	8.32	8.03	3.70	7.41	5.20	3.50	2.44	1.42	1.42
2	3.18	1.91	3.89	14.41	7.10	3.67	6.51	4.67	3.32	2.26	1.32	1.40
3	3.62	2.06	3.60	15.39	5.89	3.46	5.94	4.44	6.80	3.22	1.32	1.22
4	3.56	1.88	3.35	14.45	4.89	3.34	5.46	5.36	7.31	4.18	1.32	1.22
5	3.50	1.80	3.16	10.53	4.34	3.26	4.96	5.15	6.15	4.16	1.26	1.32
6	3.38	1.78	2.96	9.13	3.96	3.12	4.53	4.91	4.79	3.12	1.38	1.75
7	3.34	1.78	3.05	8.01	3.55	8.34	4.21	4.72	4.16	2.69	1.52	1.62
8	3.12	1.88	2.95	6.67	3.24	13.30	3.99	4.54	4.52	2.34	1.68	1.53
9	2.75	1.88	2.82	5.61	3.20	11.99	4.09	4.31	4.54	2.23	1.94	1.59
10	2.46	1.78	2.85	5.31	3.14	10.34	5.33	3.88	4.34	3.65	2.06	1.70
11	2.34	1.82	2.86	5.52	3.15	7.46	6.84	3.74	4.47	2.84	1.87	1.84
12	2.11	1.89	2.70	6.13	3.22	6.14	7.01	3.32	4.62	2.42	2.05	1.76
13	2.14	1.89	2.70	10.51	3.14	6.10	5.89	2.96	4.19	2.31	1.84	1.80
14	1.99	1.98	2.74	10.56	2.82	8.37	6.36	2.88	3.70	2.12	1.56	1.58
15	2.22	2.12	2.72	8.26	2.64	7.91	7.59	2.82	3.46	2.07	1.54	1.55
16	2.30	2.52	2.54	5.84	2.75	5.76	6.81	2.88	3.82	2.15	1.42	1.62
17	2.34	2.57	3.52	4.99	2.78	5.66	6.67	3.02	3.65	2.90	1.46	1.52
18	2.48	2.49	9.19	4.40	2.84	5.27	6.93	3.06	4.14	2.72	1.44	1.39
19	2.63	2.82	10.19	4.00	2.86	5.03	6.11	3.26	4.26	2.86	1.55	1.44
20	3.28	3.28	8.73	3.85	2.82	4.78	5.80	3.18	4.78	2.60	1.47	1.32
21	3.64	3.99	6.77	4.35	2.75	4.66	6.95	2.96	4.72	2.78	1.38	1.36
22	3.26	4.70	5.81	6.22	2.66	6.68	9.76	2.86	4.76	2.42	1.36	1.32
23	2.96	4.58	5.40	7.09	3.18	8.87	9.72	4.60	4.44	2.24	1.86	1.35
24	2.68	3.94	5.42	6.59	3.62	10.51	9.08	5.38	3.85	2.18	1.56	1.46
25	2.45	3.73	5.85	6.03	4.59	12.01	7.96	4.86	3.98	2.00	1.41	1.36
26	2.44	3.45	7.96	5.75	4.60	14.66	6.85	4.06	4.82	1.90	1.36	1.41
27	2.39	3.51	7.72	5.64	4.18	15.88	6.84	3.70	4.24	1.64	1.42	1.32
28	2.10	3.82	6.90	5.65	3.95	15.56	8.35	3.54	3.50	1.78	1.42	1.34
29	2.18	4.42	7.24	5.49	3.86	13.72	7.52	4.19	2.98	1.66	1.55	1.52
30	2.09	4.44	7.58	6.04	-------	11.38	6.09	4.24	2.68	1.58	1.44	1.56
31	2.08	-------	7.55	7.56	-------	9.47	-------	3.75	-------	1.46	1.43	-------

Daily Discharge, in Second-feet, of Beaver River at Newport, Lawrence County, for the year ending September 30, 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.
1	459	308	1,530	7,560	6,980	1,255	5,798	2,560	1,118	497	136	136
2	907	268	1,388	24,790	5,250	1,234	4,296	2,038	998	413	119	132
3	1,200	325	1,..86	28,749	3,397	1,091	3,463	1,831	4,750	933	119	106
4	1,152	257	1,018	24,950	2,246	1,011	2,857	2,739	5,618	1,609	119	106
5	1,118	230	895	12,615	1,744	959	2,315	2,508	3,762	1,593	111	119
6	1,038	224	771	9,286	1,440	870	1,912	2,265	2,150	870	128	214
7	1,011	224	826	6,940	1,152	7,600	1,634	2,084	1,593	621	154	177
8	870	257	765	4,544	946	20,640	1,462	1,921	1,903	450	193	156
9	652	257	690	3,038	920	16,581	1,538	1,718	1,921	400	278	170
10	507	224	707	2,682	882	12,140	2,704	1,381	1,744	1,220	325	199
11	450	236	713	2,929	888	5,888	4,814	1,283	1,858	701	253	243
12	346	260	626	3,734	933	3,748	5,097	998	1,993	488	321	217
13	360	260	626	12,585	882	3,690	3,397	771	1,617	436	243	230
14	296	293	647	12,690	690	7,630	4,070	724	1,255	351	162	167
15	395	351	637	7,440	595	6,740	6,131	690	1,091	329	158	160
16	431	536	546	3,332	652	3,228	4,763	724	1,339	364	136	177
17	450	560	1,132	2,345	638	3,100	4,544	807	1,220	735	143	154
18	516	521	9,418	1,795	701	2,637	4,961	832	1,577	637	139	130
19	590	690	11,766	1,470	713	2,385	3,704	959	1,676	713	160	139
20	972	972	8,413	1,360	690	2,141	3,280	907	2,141	575	145	119
21	1,214	1,462	4,702	1,752	652	2,029	4,995	771	2,084	668	128	125
22	959	2,065	3,293	3,864	606	4,559	10,734	713	2,122	488	125	119
23	771	1,957	2,785	5,233	907	8,714	10,638	1,975	1,831	404	250	123
24	616	1,425	2,809	4,420	1,200	12,565	9,176	2,762	1,350	377	162	143
25	502	1,276	3,345	3,592	1,963	16,639	6,840	2,217	1,455	300	134	125
26	497	1,084	6,840	3,215	1,975	25,790	4,830	1,515	2,179	264	125	134
27	473	1,125	6,378	3,075	1,609	30,758	4,814	1,255	1,659	182	136	119
28	342	1,339	4,910	3,088	1,432	29,446	7,620	1,145	1,118	224	136	122
29	377	1,813	5,492	2,803	1,367	22,134	5,998	1,617	783	188	160	154
30	338	1,831	6,112	3,606	------	14,846	3,676	1,659	616	167	139	162
31	334	------	6,055	6,074	------	10,061	------	1,290	------	143	137	------

Estimated Monthly Discharge of Beaver River at Newport, Lawrence County

(Drainage area, 2,125 square miles)

Month	Discharge in Second-feet			Run-off	
	Maximum	Minimum	Mean	Second-feet per square mile	Depth in inches
1915					
October	1,214	296	650	0.306	0.353
November	2,065	224	754	0.355	0.396
December	11,766	546	3,130	1.473	1.698
1916					
January	28,749	1,360	6,956	3.273	3.774
February	6,980	595	1,520	0.715	0.771
March	30,758	270	8,779	4.131	4.763
April	10,734	1,462	4,736	2.229	2.488
May	2,762	690	1,505	0.708	0.816
June	5,618	616	1,884	0.887	0.990
July	1,609	143	559	0.263	0.303
August	325	111	167	0.079	0.091
September	243	106	153	0.072	0.080
The year	30,758	106	2,579	1.214	16.523

MISCELLANEOUS DISCHARGE MEASUREMENTS OF PENNSYLVANIA STREAMS

Stream	Location	Date	Drainage Area above point	Gage height	Total discharge	Discharge per sq. mile tributary drainage area	Remarks
			Sq. mi.	Feet	Sec.-ft.	Sec.-ft.	
Ohio River	Sewickley	Feb. 23, 1916	19,400	682.24	26,824	1.38	By U. S. Army Engineers
Ohio River	Sewickley	Mar. 24, 1916	19,400	695.13	131,679	6.79	By U. S. Army Engineers
Ohio River	Sewickley	Mar. 25, 1916	19,400	690.07	84,898	4.38	By U. S. Army Engineers
Ohio River	Sewickley	Mar. 29, 1916	19,400	703.10	232,844	12.00	By U. S. Army Engineers
Ohio River	Sewickley	Mar. 30, 1916	19,400	701.20	209,100	10.78	By U. S. Army Engineers
Ohio River	Sewickley	Mar. 31, 1916	19,400	699.45	187,125	9.65	By U. S. Army Engineers
Ohio River	Sewickley	April 1, 1916	19,400	697.97	172,863	8.91	By U. S. Army Engineers
Outlet (Sandy Lake)	Sandy Lake Boro	May 7, 1914	8.1	2.13	16	1.98	Main Street Bridge
Outlet (Sandy Lake)	Sandy Lake Boro	May 12, 1914	8.1	3.16	124	15.31	Main Street Bridge
Outlet (Sandy Lake)	Sandy Lake Boro	May 12, 1914	8.1	3.14	108	13.33	Main Street Bridge
Outlet (Sandy Lake)	Sandy Lake Boro	Aug. 10, 1914	8.1	1.05	1	0.123	Main Street Bridge
Outlet (Sandy Lake)	Sandy Lake Boro	July 13, 1916	8.1	0.60	2	0.247	Main Street Bridge
Schuylkill Canal	Manayunk	June 2, 1916	--------	*68.1	245	--------	Green Lane Bridge. Canal only
Schuylkill River	Manayunk	May 31, 1916	1,820	*68.2	1,757	0.965	Green Lane Bridge. 236 sec.-ft. added to river discharge for canal
Schuylkill River	Manayunk	June 1, 1916	1,820	*68.2	1,862	1.02	Green Lane Bridge. 242 sec.-ft. added to river discharge for canal
Schuylkill River	Manayunk	June 21, 1916	1,820	*69.8	4,076	2.24	Green Lane Bridge. 405 sec.-ft. added to river discharge for canal
Spring Creek	Harrisburg	Sept. 15, 1916	41	--------	95	8.63	Approx. 2,000 feet above Cameron St.
Sterling Run	Sterling Run	Mar. 28, 1916	25	--------	1,147	45.88	Maximum for flood of this date. Measurement at mouth
Sterling Run	Sterling Run	Mar. 28, 1916	25	--------	970	38.80	Water surface 0.46 feet lower than previous measurement

NOTE—*Tail race elevation Philadelphia Hydro-Electric Company.

TABLE NO. X

Summary of Run-off in Second-feet per Square Mile, for the Year Ending September 30, 1916

Delaware Basin

Station	Drainage Area	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Year
Lackawaxen river at Hawley	290	0.72	0.73	1.44	2.78	1.77	1.51	5.90	1.88	2.34	1.74	0.49	0.23	1.79
Wallenpaupack creek at Wilsonville	239	0.90	1.11	1.73	3.07	2.21	2.15	7.02	2.45	2.43	2.41	0.73	0.33	2.21
Delaware river at Port Jervis, N. Y.,	3,250	0.90	1.00	1.89	3.49	2.35	2.17	6.34	1.96	1.97	1.66	0.66	0.52	2.07
Lehigh river at Bethlehem	1,235	0.66	0.79	1.36	2.17	1.47	2.32	3.83	1.45	2.04	2.71	1.02	0.55	1.70
Delaware river at Riegelsville, N. J.	6,430	0.82	0.90	1.71	2.80	2.02	2.27	5.82	1.87	1.99	2.05	0.87	0.58	1.97
Schuylkill river at Schuylkill Haven	127	0.81	0.77	1.26	2.07	1.46	2.43	3.87	1.46	2.77	3.26	1.65	1.02	1.91
Perkiomen creek at Graters Ford	280	1.41	1.65	2.58	1.69	1.99	2.92	1.99	0.83	1.00	2.33	0.78	0.87	1.67
Schuylkill river at Conshohocken	1,795	0.80	0.89	1.94	1.99	1.82	3.12	2.67	1.21	*				
Darby creek at Lansdowne	35	1.40	1.40	1.83	1.57	*								
Brandywine creek at Chadds Ford	285	0.79	0.74	1.08	1.20	1.41	1.78	1.62	1.19	1.37	1.92	0.89	0.70	1.22

NOTE—*Station discontinued.

TABLE NO. XI

Summary of Run-off in Second-feet per Square Mile, for the Year Ending September 30, 1916

Susquehanna Basin

Station	Drainage Area	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Year
Towanda creek at Monroeton	218	0.95	0.91	0.99	2.68	1.51	2.95	6.65	1.32	3.60	0.45	0.10	0.28	1.86
Lackawanna river at Moosic	265	0.75	0.62	1.58	2.63	1.63	2.51	6.00	2.20	2.64	1.05	0.43	0.38	1.86
North Branch Susquehanna river at Wilkes-Barre	9,960	1.03	0.70	1.20	2.55	1.16	1.85	5.95	1.67	2.32	0.59	0.18	0.24	1.62
North Branch Susquehanna river at Danville	11,200	0.97	0.70	1.19	2.56	1.25	2.05	6.62	1.68	2.45	0.95	0.29	0.33	1.75
West Branch Susquehanna river at Bower	320	1.97	0.69	2.86	4.84	2.16	6.28	3.94	1.00	4.53	0.59	0.27	0.28	2.46
Clearfield creek at Dimeling	370	1.19	0.98	1.93	4.30	2.31	6.70	3.65	1.26	4.97	0.77	0.30	0.20	2.38
Bald Eagle creek at Milesburg	140	0.35	0.31	1.11	2.34	0.92	5.94	3.35	1.12	9.64	0.28	0.07	0.11	2.12
Bald Eagle Creek at Beech Creek	585	0.51	0.58	0.98	2.18	0.99	3.10	4.00	1.31	7.03	0.75	0.40	0.39	1.84
Lycoming creek near Trout Run	185	0.36	0.57	0.77	2.16	1.14	2.28	6.05	1.49	4.98	0.53	0.24	0.47	1.74
West Branch Susquehanna river at Williamsport	5,670	0.78	0.65	1.20	2.72	1.68	3.78	5.61	1.72	6.12	0.67	0.23	0.21	2.10
Raystown Branch Juniata river at Saxton	790	0.46	0.39	1.16	1.82	1.84	4.29	2.82	0.81	2.59	0.77	0.39	0.30	1.47
Tuscarora creek near Port Royal	205	0.35	0.42	1.09	1.49	1.30	4.47	3.09	0.91	5.56	0.61	0.31		
Juniata river at Newport	3,380	0.49	0.53	1.04	1.89	1.73	3.82	4.17	1.18	4.23	0.91	0.49	0.41	1.73
Susquehanna river at Harrisburg	24,100	0.76	0.63	1.19	2.61	1.54	2.58	5.60	1.65	3.86	0.97	0.36	0.31	1.83
Yellow Breeches creek at Olmsted's Mill, Cumberland county	223	1.30	0.97	1.50	1.78	1.54	2.52	1.98	1.38	2.13	1.58	1.10	2.30	1.67

TABLE NO. XII

Summary of Run-off in Second-feet per Square Mile, for the Year Ending September 30, 1916

Ohio Basin

Station	Drainage Area	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Year
Kinzua creek at Dewdrop	171	3.65	1.58	2.34	4.99	1.87	3.80	*						
Oil creek at Rouseville	330	1.27	1.79	2.61	4.48	0.98	3.64	4.73	1.60	2.17	0.30	0.28	0.31	2.02
French creek at Kimmeytown	207	1.67	2.52	3.33	5.89	2.09	4.71	6.04	1.45	1.14	0.32	0.13	0.25	2.46
Cussewago creek above Meadville	88	1.16	1.83	3.36	4.36	0.93	2.74	3.24	1.09	0.67	0.19	0.05	0.06	1.65
Sugar creek at Wyattville	160	1.11	1.02	2.15	3.43	0.98	3.46	*						
Red Bank creek at St. Charles	540	1.25	0.78	2.26	4.93	1.59	5.28	3.81	1.83	3.69	0.83	0.16	0.35	2.24
Allegheny river at Kittanning	9,010	1.22	1.22	2.42	4.20	1.60	4.07	6.02	2.33	3.25	0.55	0.22	0.22	2.28
Crooked creek at Hileman's Farm, Armstrong county	279	0.49	0.55	2.34	5.45	2.30	5.84	2.25	0.75	2.76	0.16	0.79	0.49	2.02
Stony creek at Johnstown	465	0.69	0.51	2.14	3.42	2.73	5.16	3.18	1.30	2.54	0.44	1.05	0.40	1.96
Blacklick creek at Blacklick	386	2.10	0.87	3.45	4.63	2.88	5.23	2.95	1.19	3.29	0.70	0.53	0.30	2.34
Kiskiminitas river at Avonmore	1,720	1.11	0.88	2.73	4.40	3.12	5.22	2.86	1.35	2.66	0.60	0.80	0.34	2.17
Youghiogheny river at Connellsville	1,320	1.21	1.21	0.67	4.61	3.85	5.70	3.04	1.17	2.32	0.51	0.45	0.32	2.08
Slippery Rock creek at Wurtemburg	400	0.70	0.79	2.55	4.05	1.99	4.60	2.88	1.32	1.87	0.35	0.14	0.12	1.78
Shenango river at Turnerville	152	0.50	0.75	2.42	3.97	0.95	4.89	3.12	0.81	0.95	0.08	0.04	0.05	1.55
Little Shenango river at Greenville	107	0.51	0.65	2.00	3.98	0.74	4.16	2.25	0.72	0.90	0.28	0.15	0.14	1.38
Pymatuning creek below Orangeville	170	0.48	0.49	2.03	3.66	0.78	4.09	2.65	0.73	0.75	0.11	0.04	0.05	1.33
Shenango river at Sharon	611	0.42	0.49	1.67	3.05	0.76	3.81	2.34	0.67	0.73	0.13	0.06	0.07	1.19
Shenango river at New Castle	797	0.43	0.47	1.71	3.16	0.83	3.86	2.46	0.72	0.77	0.15	0.07	0.06	1.23
Mahoning river at New Castle	1,070	0.22	0.30	1.11	2.69	0.54	3.41	1.37	0.50	0.98	0.36	0.04	0.04	0.97
Beaver river at Newport	2,125	0.31	0.36	1.47	3.27	0.72	4.13	2.23	0.71	0.89	0.26	0.08	0.07	1.21

NOTE.—*Station discontinued.

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